



Service Manual

# Service Manual

## KG290/KG291



Model : KG290/KG291



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## Security

### Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common - carrier telecommunication service of facilities accessed through or connected to it. The manufacturer will not be responsible for any charges that are resulted from such unauthorized use.

# 1. INTRODUCTION

## 1.1 Purpose

This manual provides the information necessary to repair, calibration, description and download the features of this model.

## 1.2 Regulatory Information

### A. Security

Toll fraud, the unauthorized use of telecommunications system by an unauthorized part (for example, persons other than your company's employees, agents, subcontractors, or person working on your company's behalf) can result in substantial additional charges for your telecommunications services. System users are responsible for the security of own system. There are may be risks of toll fraud associated with your telecommunications system. System users are responsible for programming and configuring the equipment to prevent unauthorized use. The manufacturer does not warrant that this product is immune from the above case but will prevent unauthorized use of common-carrier telecommunication service of facilities accessed through or connected to it. The manufacturer will not be responsible for any charges that result from such unauthorized use.

### B. Incidence of Harm

If a telephone company determines that the equipment provided to customer is faulty and possibly causing harm or interruption in service to the telephone network, it should disconnect telephone service until repair can be done. A telephone company may temporarily disconnect service as long as repair is not done.

### C. Changes in Service

A local telephone company may make changes in its communications facilities or procedure. If these changes could reasonably be expected to affect the use of the this phone or compatibility with the network, the telephone company is required to give advanced written notice to the user, allowing the user to take appropriate steps to maintain telephone service.

### D. Maintenance Limitations

Maintenance limitations on this model must be performed only by the manufacturer or its authorized agent. The user may not make any changes and/or repairs expect as specifically noted in this manual. Therefore, note that unauthorized alternations or repair may affect the regulatory status of the system and may void any remaining warranty.

# 1. INTRODUCTION

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## E. Notice of Radiated Emissions

This model complies with rules regarding radiation and radio frequency emission as defined by local regulatory agencies. In accordance with these agencies, you may be required to provide information such as the following to the end user.

## F. Pictures

The pictures in this manual are for illustrative purposes only; your actual hardware may look slightly different.

## G. Interference and Attenuation

Phone may interfere with sensitive laboratory equipment, medical equipment, etc. Interference from unsuppressed engines or electric motors may cause problems.

## H. Electrostatic Sensitive Devices

### ATTENTION

**Boards, which contain Electrostatic Sensitive Device (ESD), are indicated  by the sign. Following information is ESD handling:**

- Service personnel should ground themselves by using a wrist strap when exchange system boards.
- When repairs are made to a system board, they should spread the floor with anti-static mat which is also grounded.
- Use a suitable, grounded soldering iron.
- Keep sensitive parts in these protective packages until these are used.
- When returning system boards or parts like EEPROM to the factory, use the protective package as described.

## 1.3 Abbreviations

For the purposes of this manual, following abbreviations apply:

APC	Automatic Power Control
BB	Baseband
BER	Bit Error Ratio
CC-CV	Constant Current - Constant Voltage
DAC	Digital to Analog Converter
DCS	Digital Communication System
dBm	dB relative to 1 milli watt
DSP	Digital Signal Processing
EEPROM	Electrical Erasable Programmable Read-Only Memory
ESD	Electrostatic Discharge
FPCB	Flexible Printed Circuit Board
GMSK	Gaussian Minimum Shift Keying
GPIO	General Purpose Interface Bus
GSM	Global System for Mobile Communications
IPUI	International Portable User Identity
IF	Intermediate Frequency
LCD	Liquid Crystal Display
LDO	Low Drop Output
LED	Light Emitting Diode
OPLL	Offset Phase Locked Loop

# 1. INTRODUCTION

---

PAM	Power Amplifier Module
PCB	Printed Circuit Board
PGA	Programmable Gain Amplifier
PLL	Phase Locked Loop
PSTN	Public Switched Telephone Network
RF	Radio Frequency
RLR	Receiving Loudness Rating
RMS	Root Mean Square
RTC	Real Time Clock
SAW	Surface Acoustic Wave
SIM	Subscriber Identity Module
SLR	Sending Loudness Rating
SRAM	Static Random Access Memory
PSRAM	Pseudo SRAM
STMR	Side Tone Masking Rating
TA	Travel Adapter
TDD	Time Division Duplex
TDMA	Time Division Multiple Access
UART	Universal Asynchronous Receiver/Transmitter
VCO	Voltage Controlled Oscillator
VCTCXO	Voltage Control Temperature Compensated Crystal Oscillator
WAP	Wireless Application Protocol

## 2. PERFORMANCE

### 2.1 H/W Features

Item	Feature	Comment
Standard Battery	Li-ion Polymer, 3.7V 830mAh	
Stand by TIME	Up to 200 hrs : Paging Period 5, RSSI 85dBm	
Talk time	Up to 200min : GSM Tx Level 7	
Stand by time	Up to 200 hours (Paging Period: 5, RSSI: -85 dBm)	
Charging time	Approx. 3 hours	
RX Sensitivity	GSM, EGSM: -109dBm, DCS: -109dBm	
TX output power	GSM, EGSM: 32.3dBm(Level 5), DCS , PCS: 29.5dBm(Level 0)	
GPRS compatibility	Class 10	
SIM card type	3V Small	
Display	LCD : TFT 128 × 160 pixel 262K Color	
Status Indicator	Hard icons. Key Pad 0 ~ 9, #, *, Up/Down Navigation Key Menu Key, Clear Key, Back Key, Confirm Key Send Key, Soft Key(Left/Right) Volume Key(Up/Down), PWR Key, Camera Key	
ANT	Internal	
EAR Phone Jack	Yes	
PC Synchronization	Yes	
Speech coding	EFR/FR/HR	
Data and Fax	Yes	
Vibrator	Yes	
Loud Speaker	Yes	
Voice Recoding	Yes	
Microphone	Yes	
Speaker/Receiver	One way speaker	
Travel Adapter	Yes	
MIDI	40 Poly (Mono SPK)	
Camera	1.3M CMOS	

## 2. PERFORMANCE

### 2.2 Technical Specification

Item	Description	Specification					
1	Frequency Band	<b>GSM</b> • TX: 890 + n x 0.2 MHz • RX: 935 + n x 0.2 MHz (n=1~124) <b>PCS</b> • TX: 1850.2 + (n-512) x 0.2 MHz • RX: 1930.2+ (n-1512) x 0.2 MHz (n=512~810) <b>DCS</b> • TX: 1710.2 + (n-512) x 0.2 MHz • RX: 1805.2 + (n-512) x 0.2 MHz (n=512~885)					
2	Phase Error	RMS < 5 degrees Peak < 20 degrees					
3	Frequency Error	< 0.1 ppm					
4	Power Level	<b>GSM</b>					
		Level	Power	Toler.	Level	Power	Toler.
		5	33 dBm	±2dB	13	17 dBm	±3dB
		6	31 dBm	±3dB	14	15 dBm	±3dB
		7	29 dBm	±3dB	15	13 dBm	±3dB
		8	27 dBm	±3dB	16	11 dBm	±5dB
		9	25 dBm	±3dB	17	9 dBm	±5dB
		10	23 dBm	±3dB	18	7 dBm	±5dB
		11	21 dBm	±3dB	19	5 dBm	±5dB
		12	19 dBm	±3dB			
		<b>DCS/PCS</b>					
		Level	Power	Toler.	Level	Power	Toler.
		0	30 dBm	±2dB	8	14 dBm	±3dB
		1	28 dBm	±3dB	9	12 dBm	±4dB
		2	26 dBm	±3dB	10	10 dBm	±4dB
		3	24 dBm	±3dB	11	8 dBm	±4dB
		4	22 dBm	±3dB	12	6 dBm	±4dB
		5	20 dBm	±3dB	13	4 dBm	±4dB
		6	18 dBm	±3dB	14	2 dBm	±5dB
7	16 dBm	±3dB	15	0 dBm	±5dB		

## 2. PERFORMANCE

Item	Description	Specification	
5	Output RF Spectrum (due to modulation)	<b>GSM, EGSM</b>	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-63
		3,000~ <6,000	-65
		6,000	-71
		<b>DCS/PCS</b>	
		Offset from Carrier (kHz).	Max. dBc
		100	+0.5
		200	-30
		250	-33
		400	-60
		600~ <1,200	-60
		1,200~ <1,800	-60
		1,800~ <3,000	-65
		3,000~ <6,000	-65
		6,000	-73
6	Output RF Spectrum (due to switching transient)	<b>GSM, EGSM</b>	
		Offset from Carrier (kHz)	Max. (dBm)
		400	-19
		600	-21
		1,200	-21
		1,800	-24

## 2. PERFORMANCE

Item	Description	Specification		
6	Output RF Spectrum (due to switching transient)	<b>DCS/PCS</b>		
		Offset from Carrier (kHz).		Max. (dBm)
		400		-22
		600		-24
		1,200		-24
		1,800		-27
7	Spurious Emissions	Conduction, Emission Status		
8	Bit Error Ratio	<b>GSM, EGSM</b> BER (Class II) < 2.439% @-102 dBm		
		<b>DCS,PCS</b> BER (Class II) < 2.439% @-100 dBm		
9	RX Level Report Accuracy	$\pm 3$ dB		
10	SLR	$8 \pm 3$ dB		
11	Sending Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	0	-12
		1,000	0	-6
		2,000	4	-6
		3,000	4	-6
		3,400	4	-9
		4,000	0	-
12	RLR	$2 \pm 3$ dB		
13	Receiving Response	Frequency (Hz)	Max.(dB)	Min.(dB)
		100	-12	-
		200	0	-
		300	2	-7
		500	*	-5
		1,000	0	-5
		3,000	2	-5
		3,400	2	-10
		4,000	2	
		* Mean that Adopt a straight line in between 300 Hz and 1,000 Hz to be Max. level in the range.		

## 2. PERFORMANCE

Item	Description	Specification	
14	STMR	13 ±5 dB	
15	Stability Margin	> 6 dB	
16	Distortion	dB to ARL (dB)	Level Ratio (dB)
		-35	17.5
		-30	22.5
		-20	30.7
		-10	33.3
		0	33.7
		7	31.7
		10	25.5
17	Side Tone Distortion	Three stage distortion < 10%	
18	System frequency (13 MHz) tolerance	≤ 2.5ppm	
19	32.768KHz tolerance	≤ 30ppm	
20	Ringer Volume	At least 65 dBspl under below conditions: 1. Ringer set as ringer. 2. Test distance set as 50 cm	
21	Charge Current	Fast Charge : < 430 mA Slow Charge : < 160 mA	
22	Antenna Display	Antenna Bar Number	Power
		5	-85 dBm ~
		4	-90 dBm ~ -86 dBm
		3	-95 dBm ~ -91 dBm
		2	-100 dBm ~ -96 dBm
		1	-105 dBm ~ -101 dBm
		0	~ -105 dBm
23	Battery Indicator	Battery Bar Number	Voltage
		0	3.48 ~ 3.63 V
		1	3.63 ~ 3.70 V
		2	3.70 ~ 3.76 V
		3	3.76 ~ 3.89 V
		4	3.89 V ~
24	Low Voltage Warning	3.63 ±0.03V (Call) every 1 minutes	
		3.48 ±0.03V (Standby)	

## 2. PERFORMANCE

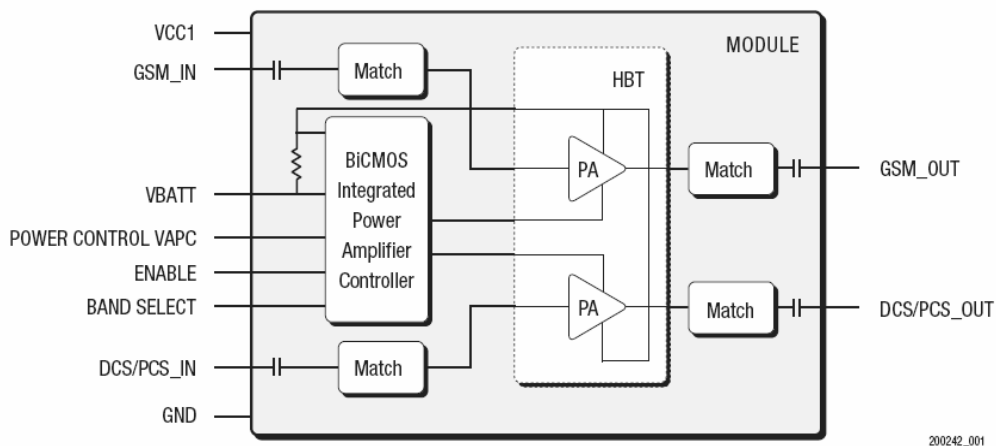
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Item	Description	Specification
25	Forced shut down Voltage	$3.33 \pm 0.03$ V
26	Battery Type	1 Li-ion Battery Standard Voltage = 3.7 V Battery full charge voltage = 4.2 V Capacity: 830mAh
27	Travel Charger	Switching-mode charger Input: 100 ~ 240 V, 50/60 Hz Output: 5.2 V, 800 mA

## 3. TECHNICAL BRIEF

### 3.1 Power Amplifier (SKY77318, U500)

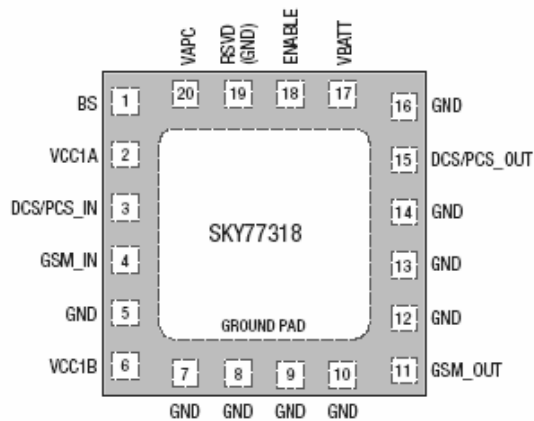
The SKY77318 Power Amplifier Module (PAM) is designed in a low profile (1.2 mm), compact form factor for quad-band cellular handsets comprising GSM850/900, DCS1800, and PCS1900 operation. The PAM also supports Class 12 General Packet Radio Service (GPRS) multi-slot operation. The module consists of separate GSM850/900 PA and DCS1800/PCS1900 PA blocks, impedancematching circuitry for 50  $\Omega$  input and output impedances, and a Power Amplifier Control (PAC) block with an internal current-sense resistor. The custom BiCMOS integrated circuit provides the internal PAC function and interface circuitry. Fabricated onto a single Gallium Arsenide (GaAs) die, one Heterojunction Bipolar Transistor (HBT) PA block supports the GSM850/900 bands and the other supports the DCS1800 and PCS1900 bands. Both PA blocks share common power supply pins to distribute current. The GaAs die, the Silicon (Si) die, and the passive components are mounted on a multi-layer laminate substrate. The assembly is encapsulated with plastic overmold. RF input and output ports of the SKY77318 are internally matched to a 50  $\Omega$  load to reduce the number of external components for a quad-band design. Extremely low leakage current (2.5  $\mu$ A, typical) of the dual PA module maximizes handset standby time. The SKY77318 also contains band-select switching circuitry to select GSM (logic 0) or DCS/PCS (logic 1) as determined from the Band Select (BS) signal. In Figure 1 below, the BS pin selects the PA output (DCS/PCS OUT or GSM850/900 OUT) and the Analog Power Control (VAPC) controls the level of output power. The VBATT pin connects to an internal current-sense resistor and interfaces to an integrated power amplifier control (iPAC™) function, which is insensitive to variations in temperature, power supply, process, and input power. The ENABLE input allows initial turn-on of PAM circuitry to minimize battery drain. Figure 1. Functional Block Diagram



200242\_001

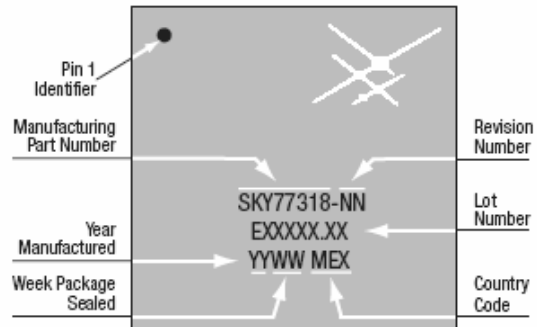
**Figure1. Functional Block Diagram**

### 3. TECHNICAL BRIEF



Pad layout as seen from top view looking through the package.

200424\_005



200424\_006

**SKY77318 PAM Pin Configuration-20-Pin  
Leadless (Top View)**

**Figure 6. Typical Case Markings**

Pin	Mame	Description
1	BS	Band Select
2	VCC1A	VCC (to GSM 1st stage, DCS/PCS 1st stages, BiCMOS PAC)
3	DCS/PCS IN	RF input 1710-1910 MHz (DCS1800, PCS1900)
4	GND IN	RF input 880-915 MHz (GSM)
5	GND	RF and DC Ground
6	VCC1B	VCC (to GSM 2nd stage, DCS/PCS 2nd stages)
7	GND	RF and DC Ground
8	GND	RF and DC Ground
9	GND	RF and DC Ground
10	GND	RF and DC Ground
11	GSM OUT	RF Output 880-915 MHz (GSM)
12	GND	RF and DC Ground
13	GND	RF and DC Ground
14	GND	RF and DC Ground
15	DCS/PCS OUT	RF Output 1710-1910 MHz (DCS 1800, PCS1900)
16	GND	RF and DC Ground
17	VBATT	Battery input to high side of internal sense resistor
18	ENABLE	BiCMOS Enable
19	RSVD(GND)	RF and DC Ground
20	VAPC	Power Control Bias Voltage
GMD PAD	GND	Ground Pad, device underside

**Table 4. SKY77318 Pin Names and Signal Descriptions**

## 3.2 Transceiver (AD6548, U501)

The AD6548/9 provides a highly integrated direct conversion radio solution that combines, on a single chip, all radio and power management functions necessary to build the most compact GSM radio solution possible. The only external components required for a complete radio design are the Rx SAWs, PA, Switchplexer and a few passives enabling an extremely small cost effective GSM Radio solution. The AD6548/9 uses the industry proven direct conversion receiver architecture of the Othello™ family. For Quad band applications the front end features four fully integrated programmable gain differential LNAs. The RF is then downconverted by quadrature mixers and then fed to the baseband programmable-gain amplifiers and active filters for channel selection. The Receiver output pins can be directly connected to the baseband analog processor. The Receive path features automatic calibration and tracking to remove DC offsets. The transmitter features a translation-loop architecture for directly modulating baseband signals onto the integrated TX VCO.

The translation-loop modulator and TX VCO are extremely low noise removing the need for external SAW filters prior to the PA. The AD6548/9 uses a single integrated LO VCO for both the receive and the transmit circuits. The synthesizer lock times are optimized for GPRS applications up to and including class 12.

AD6548 incorporates a complete reference crystal calibration system. This allows the external VCTCXO to be replaced with a low cost crystal. No other external components are required. The AD6548 uses the traditional VCTCXO reference source. The AD6548/9 also contains on-chip low dropout voltage regulators (LDOs) to deliver regulated supply voltages to the functions on chip, with a battery input voltage of between 2.9V and 5.5V.

Comprehensive power down options are included to minimize power consumption in normal use. A standard 3 wire serial interface is used to program the IC. The interface features low-voltage digital interface buffers compatible with logic levels from 1.6V to 2.9V.

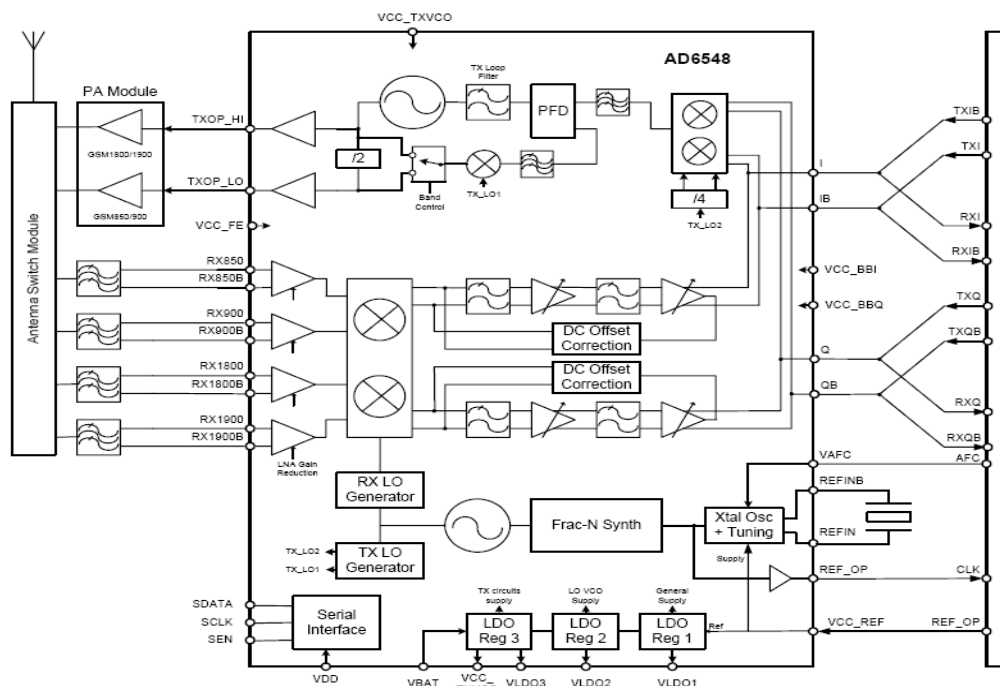
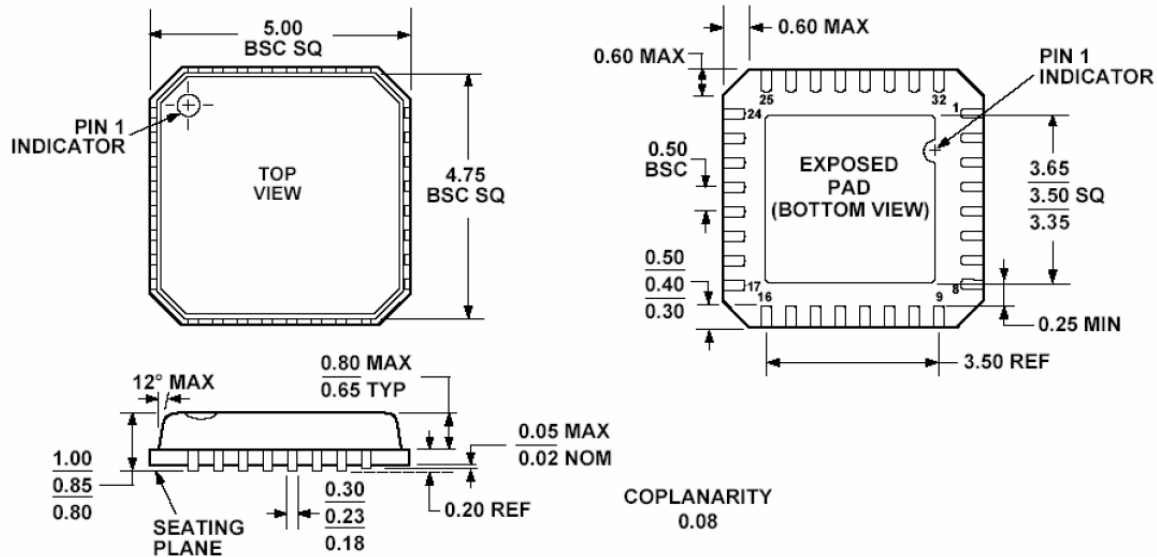


Figure 2 AD6548 Block Diagram

### 3. TECHNICAL BRIEF



**GOMPLIANT TO JEDEC STANDARDS MO-220-VHHD-2**

No	Name	Description	No	Name	Description
1	VCC_FE	Front end supply (IP)	17	VCC_REF	Reference Oscillator Supply (IP)
2	I	I baseband input/output	18	VAFC/ N/C	AD6548 Crystal Freq control (IP) AD6549: Spare Pin
3	IB	I baseband input/output	19	REFIN	Crystal Connection
4	VCC_BBI	Baseband I, TX path supply (IP)	20	REFINB	Crystal Connection
5	SDATA	Serial port data	21	REF_OP	Reference Frequency Output
6	SCLK	Serial port clock	22	QB	Q baseband input/output
7	SEN	Serial port enable	23	Q	Q baseband input/output
8	N/C	Not connected	24	VCC_BBQ	Baseband Q supply (IP)
9	VLDO3	TX LDO Output (1)	25	RX1900B	PCS 1900 LNA input
10	TXOP_LO	Transmit O/P (850/900MHz)	26	RX1900	PCS 1900 LNA input
11	TXOP_HI	Transmit O/P (1800/1900MHz)	27	RX1800B	DCS 1800 LNA input
12	VCC_TXVCO	TX VCO supply (1)	28	RX1800	DCS 1800 LNA input
13	VDD	Serial interface supply	29	RX900B	E-GSM LNA input
14	VBAT	Battery I/P for LDO reg's	30	RX900	E-GSM LNA input
15	VLDO1	LDO regulator Output (2)	31	RX850B	GSM 850 LNA input
16	VLDO2	LO VCO Supply (3)	32	RX850	GSM 850 LNA input

**Table 1 AD6548/9 Pin Descriptions**

## 3.3 FEM for Triband(FL500)

Mode	Tx 1GHz	Tx 2GHz	Rx GSM	Rx EGSM	Rx DCS	Rx PCS
Vdd	On	On	On	On	On	On
Vctrl1	On	On	Off	Off	Off	Off
Vctrl2	Off	On	On	On	Off	Off
Vctrl3	Off	Off	On	Off	On	Off

Table 3-1 Band SW Logic Table

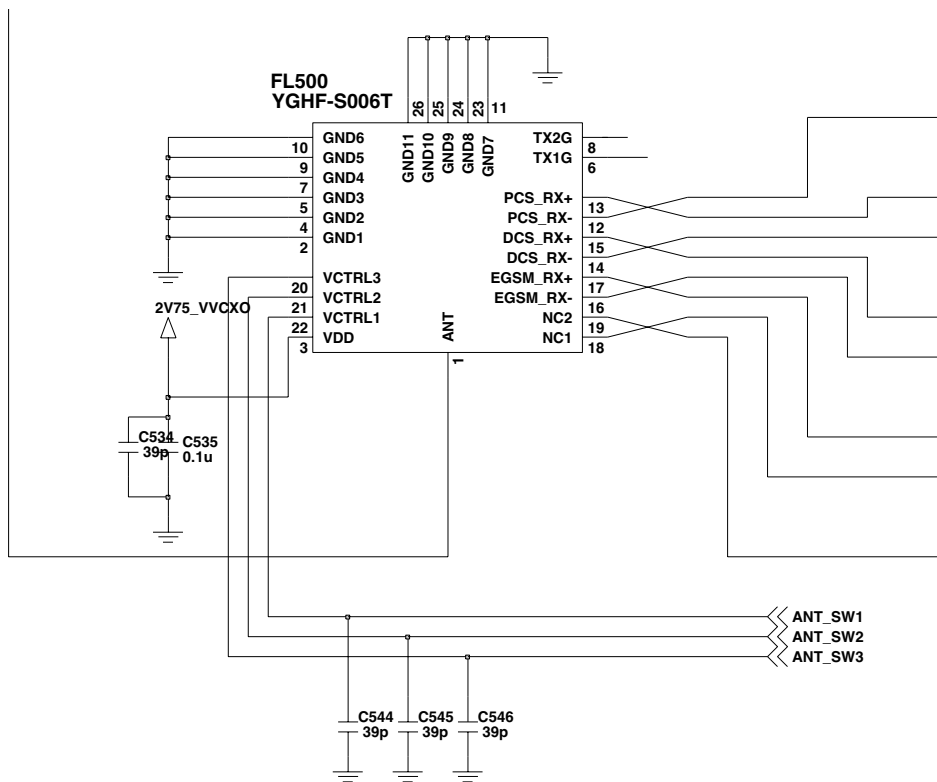


Figure 3- 2 FEM CIRCUIT DIAGRAM

### 3. TECHNICAL BRIEF

#### 3.4 26 26 MHz Clock (DCXO, X500)

The 26 MHz clock(X500) consists of a DCXO (Digital Compensated Crystal Oscillator) which oscillates at a frequency of 26 MHz. It is used within the AD6548, base band processor(AD6721,U103), CAMERA( U400,AIT813G )

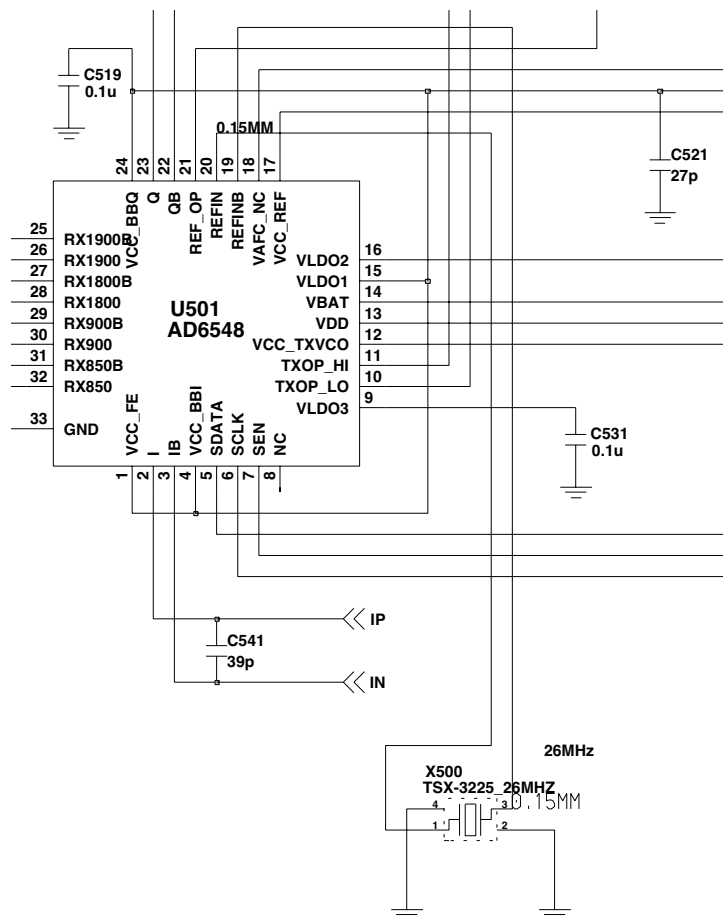
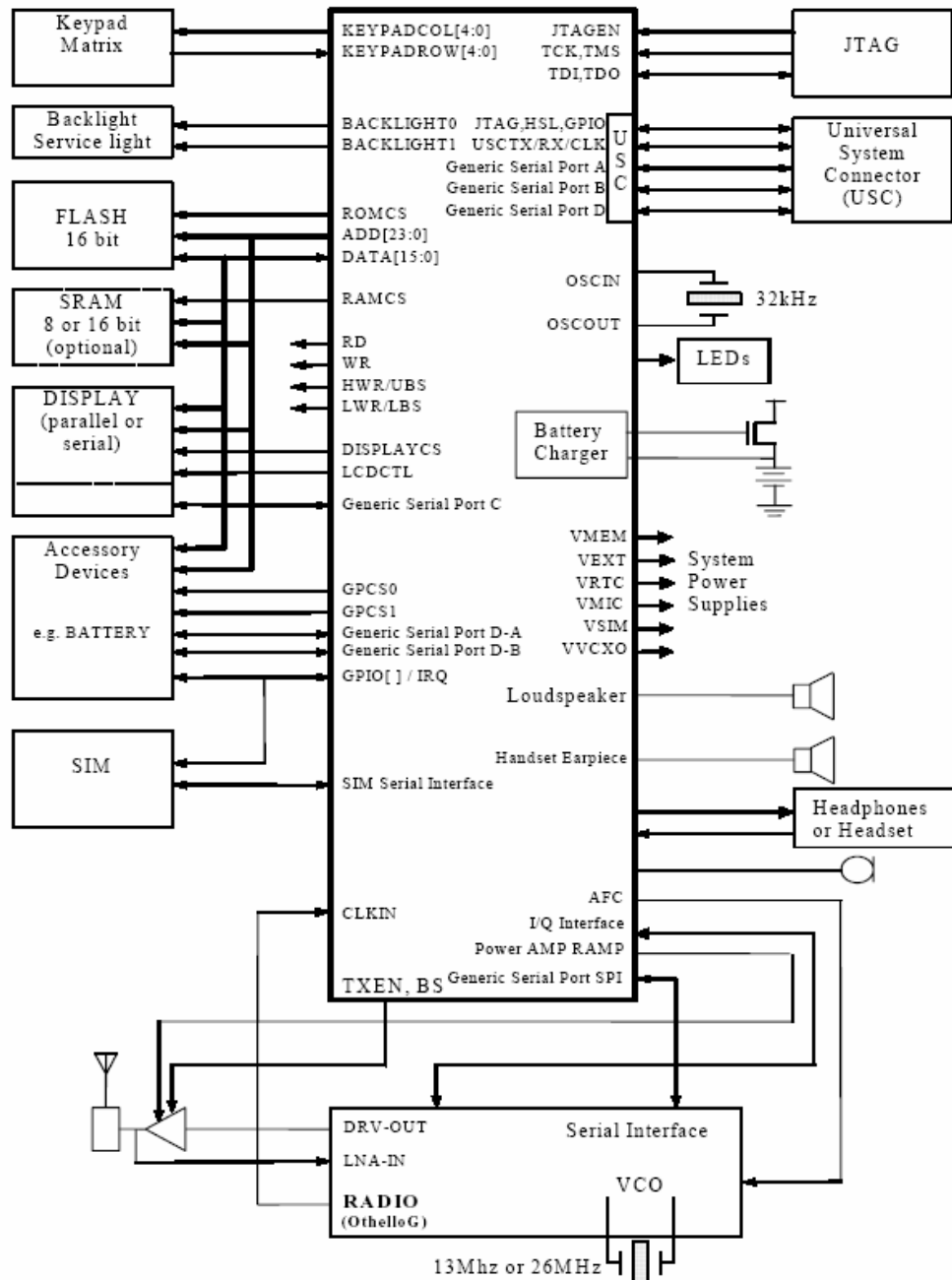


Figure 3-3. DCXO CIRCUIT DIAGRAM

### 3.5 Baseband Processor (AD6721 , U103)

- AD6721 is an ADI designed processor
- AD6721 consists of
  1. Control Processor Subsystem including:
    - 32-bit MCU ARM7TDMI® Control Processor
    - 39 MHz operation at 1.8V
    - 1Mb of on-chip System SRAM Memory
  2. DSP Subsystem including:
    - 16-bit Fixed Point DSP Processor
    - 91 MIPS[1] at 1.8V
    - Data and Program SRAM
    - Program Instruction Cache
    - Full Rate, Enhanced Full Rate and Half Rate
    - Speech Encoding/Decoding
    - Capable of Supporting AMR & PDC Speech Algorithms
  3. Peripheral Functions
    - Parallel and Serial Display Interface
    - Keypad Interface
    - Flash Memory Interface
    - Page-Mode Flash Support
    - 1.8V and 3.0V, 64 kbps SIM Interface
    - Universal System Connector Interface
    - Data Services Interface
    - Battery Interface (e.g. Dallas)
  4. Other
    - Supports 13 MHz and 26 MHz Input Clocks
    - 1.8V Typical Core Operating Voltages
    - 289-Ball Package (12x12mm) , 0.65mm Ball pitch
  5. The AD6721 baseband transmit section supports the following mobile station GMSK modulation power classes:
    - GSM 900/850 power classes 4 and 5,
    - DCS 1800 power classes 1 and 2, and
    - PCS 1900 power classes 1 and 2

### 3. TECHNICAL BRIEF



**Figure 3-4-1 SYSTEM INTERCONNECTION OF AD6721 EXTERNAL INTERFACE**

### 3.5.1 Interconnection with external devices

#### A. RTC block interface

Countered by external X-TAL

The X-TAL oscillates 32.768KHz

#### B. LCD module interface

The LCD module is controlled by CAMERA IC, AIT813G

If AIT701G is in the state of by-pass mode, the LCD control signals from AD6721 are by-passed through AIT813G.

In operating mode, the AIT813G controls the LCD module through L\_MAIN\_LCD\_CS, L\_SUB\_LCD\_CS, LCD\_RESET, LCD\_RS, LCD\_WR, LCD\_RD, L\_DATA[15-00], 2V85\_VCAM, IF\_MODE, LCD\_ID[1:3].

Signals	Description
L_MAIN_LCD_CS	MAIN LCD driver chip enable. MAIN LCD driver IC has own CS pin
LCD_ID	Select LCD modoule maker(2.4V : HITACHI, 0V : LGIT)
LCD_RESET	This pin resets LCD module. This signal comes from AD6721 directly.
LCD_WR	Enable writing to LCD Driver.
LCD_RD	Enable reading to LCD Driver.
LCD_RS	This pin determines whether the data to LCD module are display data or control data. LCD_RS can select 16 bit parallel bus.
2V8_VLCD	2.8V voltage is supplied to LCD driver IC.
IF_MODE	Select 16bits or 8bits interface mode for MAIN LCD. For the future

**Table 3-2 . LCD CONTRON SIGNALS DISCRIPTION**

### 3. TECHNICAL BRIEF

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The backlight of LCD module is controlled by AD6721 via AAT3155 , U603. The control signals related to Backlight LED are given bellow.

Signals	Description
MLED	Current source for backlight LED
LCD_DIM_CTL	Control LCD backlight level in 16 steps
MLED[1:3]	This pins are returned-paths for backlight LED current source (MLED)

**Table 3-3. DESCRIPTION OF LCD BACKLIGHT LED CONTROL**

#### **C. RF interface**

The AD6721 control RF parts through PA\_BAND, ANT\_SW1, ANT\_SW2, ANT\_SW3 , CLKON , PA\_EN, S\_EN, S\_DATA, S\_CLK

Signals	Description
PA_BAND (GPO 17)	PAM Band Select
ANT_SW1 (GPO 9)	Antenna switch Band Select
ANT_SW2 (GPO 10)	Antenna switch Band Select
PA_EN (GPO 16)	PAM Enable/Disable
S_EN (GPO 19)	PLL Enable/Disable
S_DATA (GPO 20)	Serial Data to PLL
S_CLK (GPO 21)	Clock to PLL

**Table 3-4. RF CONTROL SIGNALS DESCRIPTION**

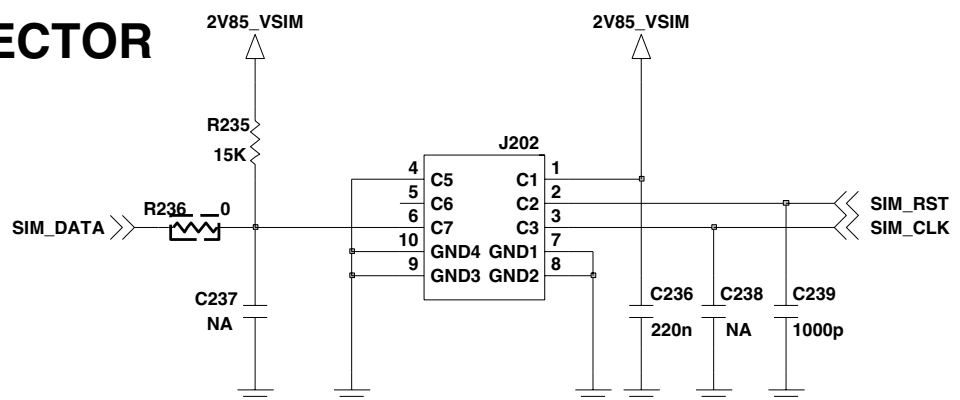
#### D. SIM interface

The AD6721 provides SIM Interface Module. The AD6721 checks status periodically during established call mode whether SIM card is inserted or not, but it doesn't check during deep Sleep mode. In order to communicate with SIM card, 3 signals SIM\_DATA, SIM\_CLK, SIM\_RST(GPIO\_23) are required. The descriptions about the signals are given by bellow Table 3-5 in detail.

Signals	Description
SIM_DATA	This pin receives and sends data to SIM card. This model can support only 3.0 volt interface SIM card.
SIM_CLK	Clock 3.25MHz frequency.
SIM_RST (GPIO_23)	Reset SIM block

**Table 3-5. SIM CONTROL SIGNALS DESCRIPTION**

## SIM CONNECTOR



**Figure 3-5. SIM Interface of AD6721**

### 3. TECHNICAL BRIEF

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#### E. LDO Block

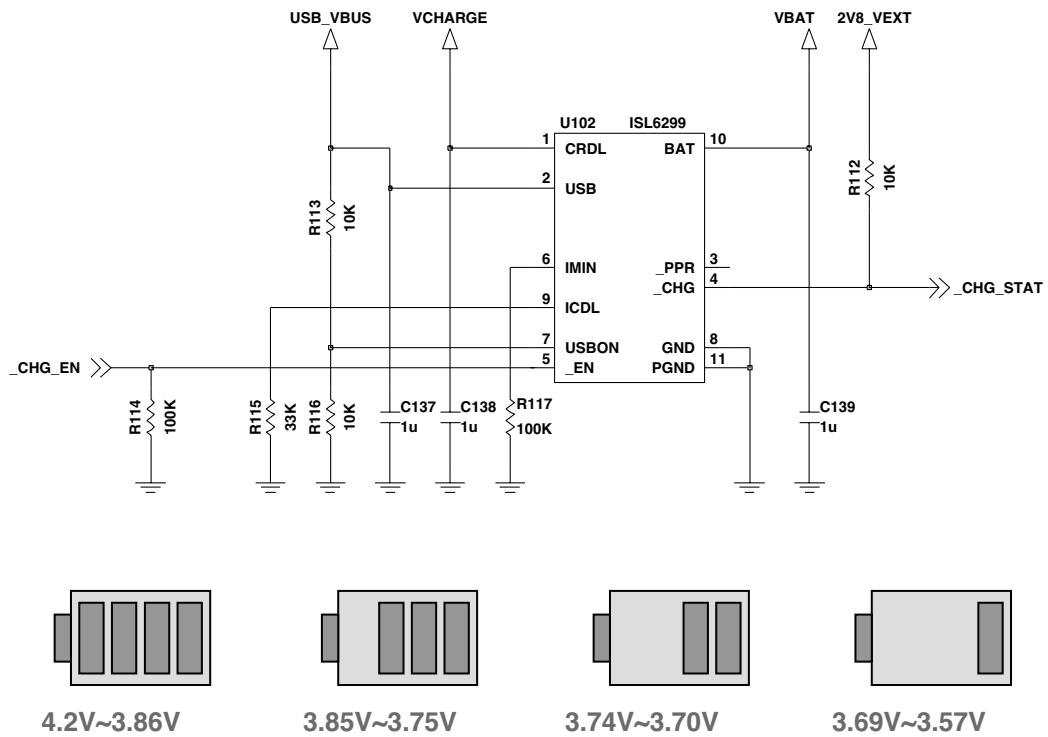
There are 8 LDOs in the AD6721.

- VCORE : supplies Digital baseband Processor core and AD6721 digital core
- VMEM : supplies external memory and the interface to the external memory on the digital baseband processor (1.8V or 2.8V, 150mA)
- VEXT : supplies Radio digital interface and high voltage interface (2.8V, 170mA)
- VSIM : supplies the SIM interface circuitry on the digital processor and SIM card (2.85V, 20mA)
- VRTC : supplies the Real-Time Clock module (1.8 V, 20  $\mu$ A)
- VABB : supplies the analog portions of the AD6721
- VMIC : supplies the microphone interface circuitry (2.5 V, 1 mA)
- VVCXO : supplies the voltage controlled crystal oscillator ( 2.75 V, 10 mA)

### 3.6 Battery Charging Block

1. Charging method : CC-CV
  2. Charger detect voltage : 4.0V
  3. Charging time : 3h
  4. Charging current : 500mA
  5. CV voltage : 4.2V
  6. Cutoff current : 100mA
  7. Full charge indication current (icon stop current) : 100mA
  8. Recharge voltage : 4.00V
  9. Low battery alarm
    - a. Idle : 3.50V~3.35V
    - b. Dedicated : 3.56V~3.35V
- Low battery alarm interval
- Idle : 3min
- Dedicated:1min
- Switch-off voltage : 3.35V

## CHARGE(TA+USB)



**Figure 3-6. CIRCUIT FOR BATTERY CHARGING**

### 3. TECHNICAL BRIEF

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#### 3.7 Display and Interface

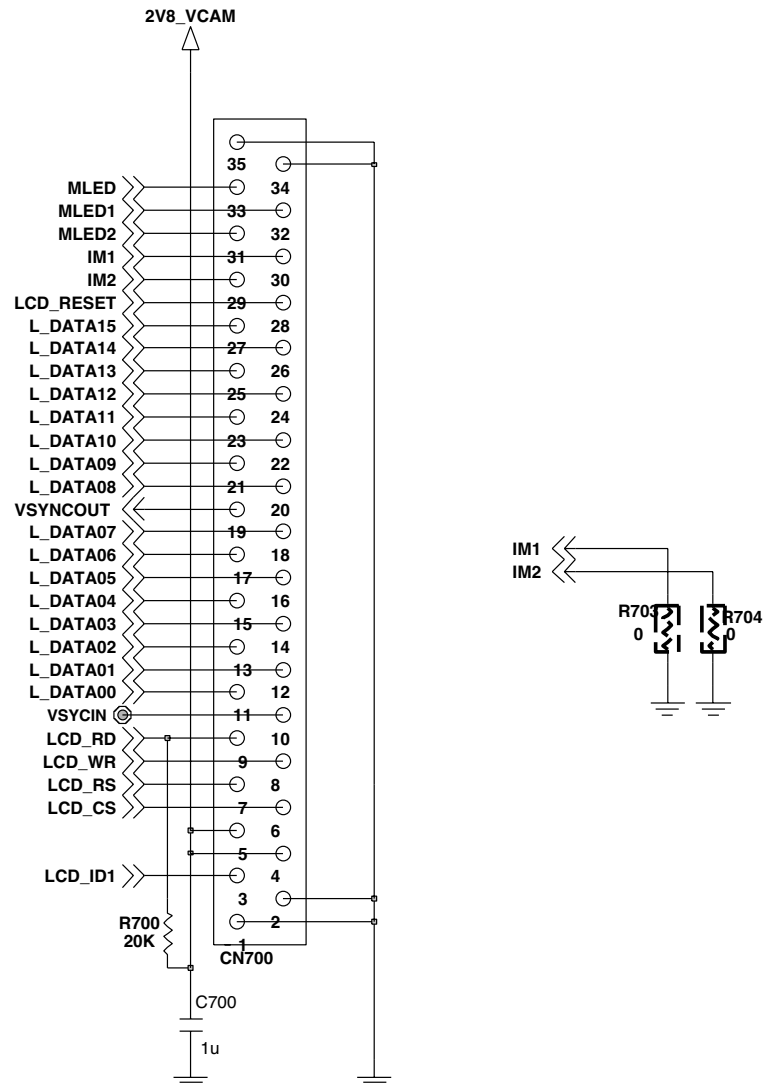
- Main LCD

Properties	Spec.	Unit
Active Screen Size	28.032*35.04	mm
Color Depth	262,144	colors
Resolution	128 X RGB X 160	dots

Controlled by L\_MAIN\_LCD\_CS, LCD\_RESET, LCD\_RS, LCD\_WR, LCD\_RD, IFMODE, L\_DATA[00:15] ports

- L\_MAIN\_LCD\_CS : MAIN LCD driver chip enable. MAIN LCD driver IC has own CS pin
- LCD\_RST : This pin resets LCD module. This signal comes from AD6721 directly.
- LCD\_RS: This pin determines whether the data to LCD module are display data or control data.
- L\_WR : Write control Signal
- L\_RD : Read control Signal. But this pin used only for debugging.
- L\_DATA[00:15] : Parallel data lines.
- LCD\_ID[1:2] : LCD type selection signals
  - LCD\_ID1 : LCD maker(2.4V is HITACHI, 0V is LGIT)
  - LCD\_ID[2:3] : for the future using
- For using 262K color, data buses should be 16 bits.

#### LCD CONNECTOR 35pin(ZIP) ENQY0013901(ELCO,14-6293-035-000-829)

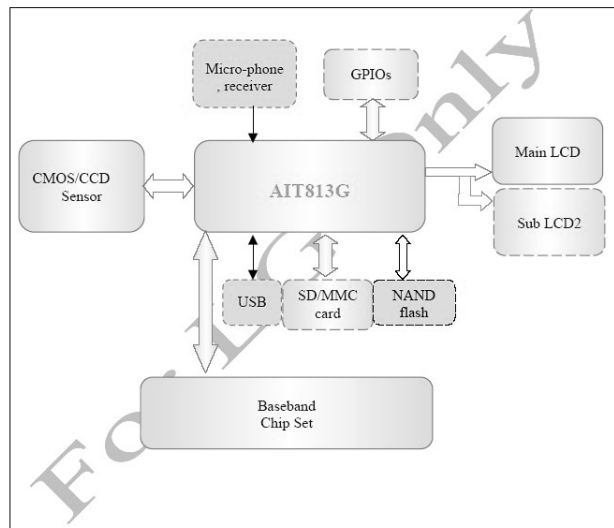


**Figure 3-7. LCD INTERFACE CIRCUIT**

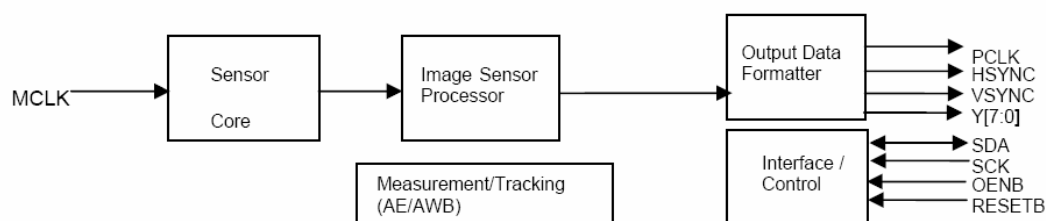
### 3. TECHNICAL BRIEF

#### 3.8 Camera IC(AIT813G , U400)

This model has a built-in SXGA(1280 x 960) camera module. And the camera produces JPG pictures. Camera module is controlled by AIT701G. Interface is done by I2C and YCbCr format. I2C is a control signal and YCbCr is real data interface signal.



**Figure 3-8. AIT701G BLOCK DIAGRAM**



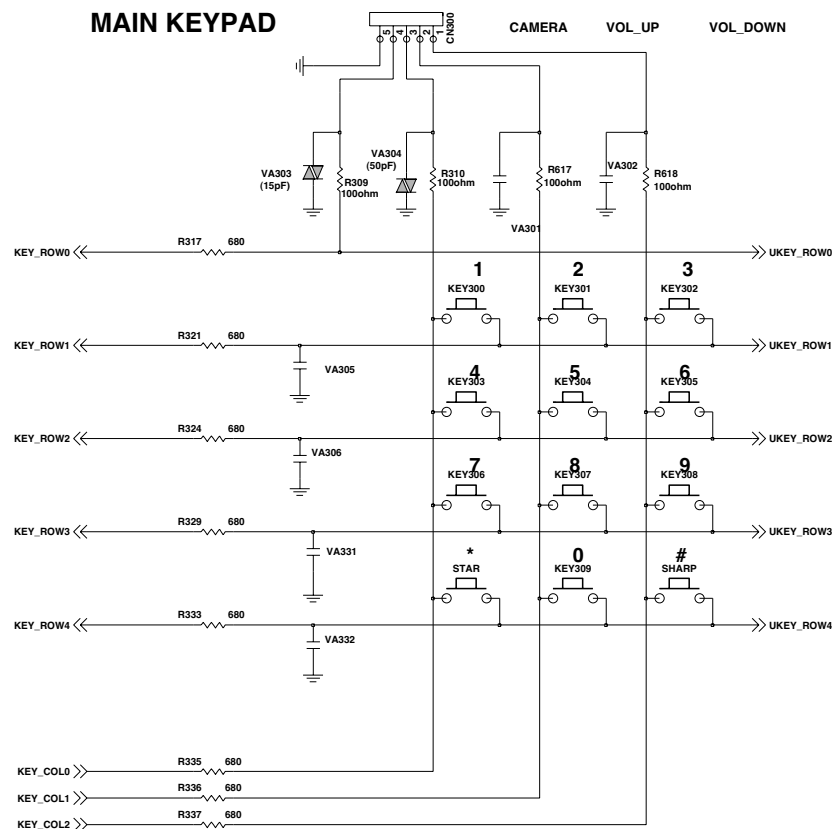
**Figure 3-9. SENSOR CHIP BLOCK DIAGRAM**



### 3. TECHNICAL BRIEF

## 3.9 Keypad Switches and Scanning

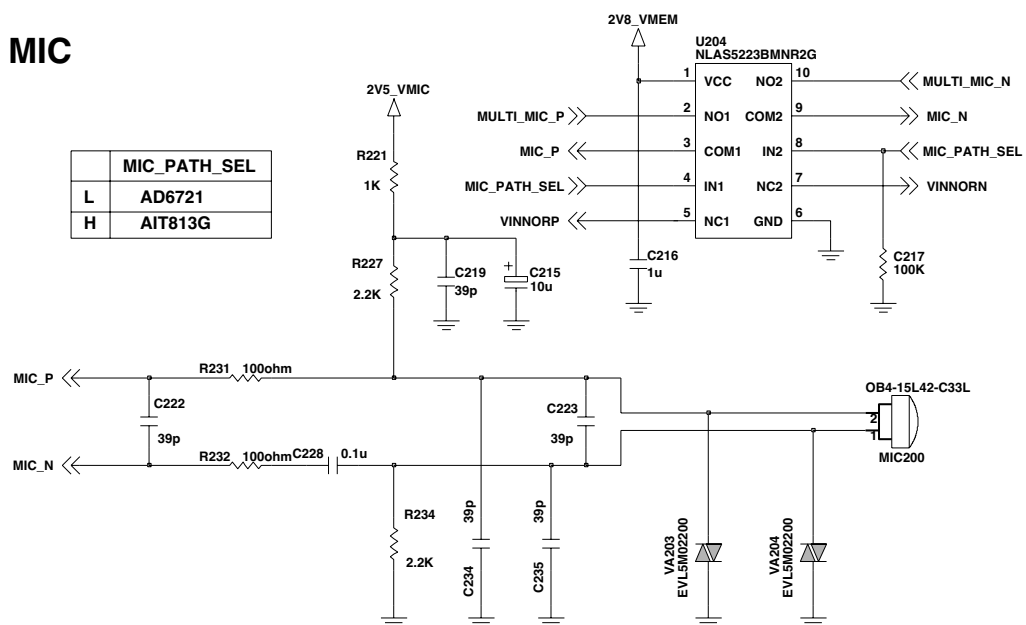
The key switches are metal domes, which make contact between two concentric pads on the keypad layer of the PCB when pressed. There are 15 switches (Normal Key 12EA, Volume up down side key, camera side key), connected in a matrix of 5 rows by 3 columns, as shown in Figure 3-11, which is connected independently. Functions, the row and column lines of the keypad are connected to ports of AD6721. The columns are outputs, while the rows are inputs and have pull-up resistors built in. When a key is pressed, the corresponding row and column are connected together, causing the row input to go low and generate an interrupt. The columns/rows are then scanned by AD6721 to identify the pressed key.



**Figure 3-11. Keypad Switches and Scanning**

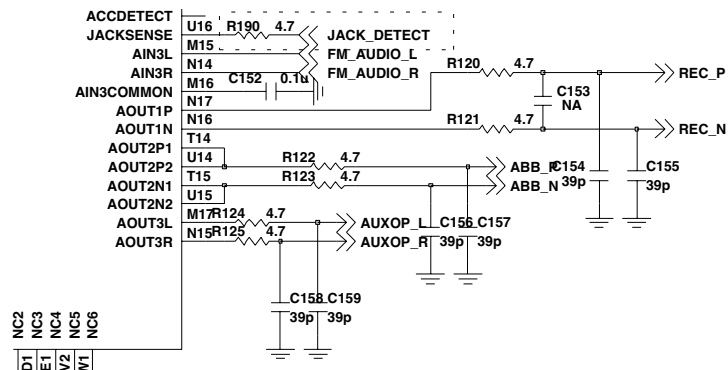
## 3.10 Microphone

The microphone is placed to the Rear cover and contacted to main PCB. The audio signal is passed to VINNORP and VINNORN pins of AD6721. The voltage supply VMIC is output from AD6721, and is a biased voltage for the VINNORP. The VINNORP and VINNORN signals are then A/D converted by the voiceband ADC part of AD6721. The digitized speech (PCM 8KHz ,16KHz) is then passed to the DSP section of AD6721 for processing (coding, interleaving etc).



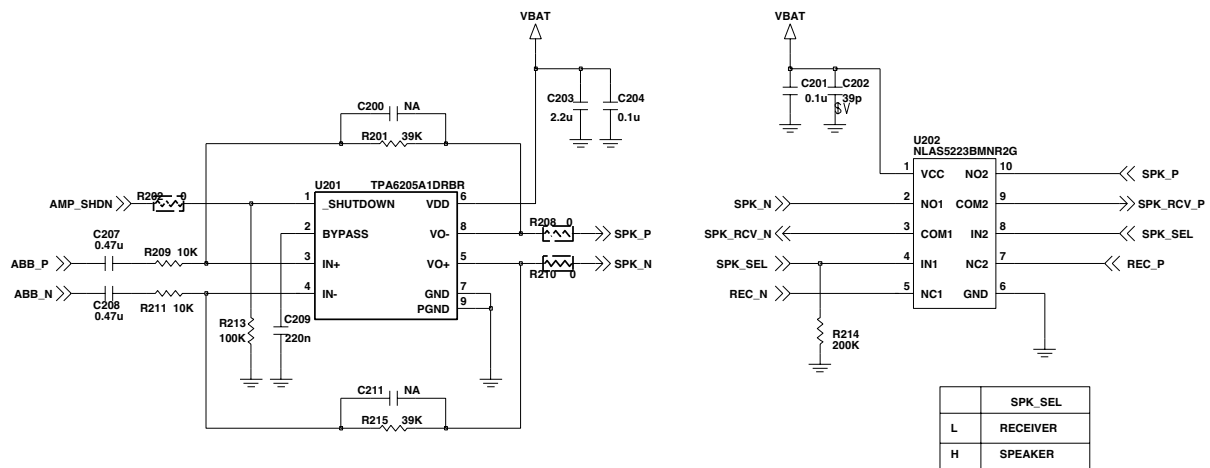
**Figure 3-12. Connection between Microphone and AD6721**

## 3.11 Main Speaker



### 3. TECHNICAL BRIEF

#### ACOUSTIC & MIDI



**Figure 3-13. MAIN SPEAKER**

This phone has 6 electrodes such as GND, AUXIP, AUXIN (this pin is floating), AUXOP, JACK\_DETECT, HOOK\_DETECT. This type supports mono sound

## Switching from Receiver to Headset Jack

If jack is inserted, JACK\_DETECT goes from low to high.

Audio path is switched from receiver to earphone by JACK\_DETECT interrupt.

## Switching from Headset Jack to Receiver

If jack is removed, JACK\_DETECT goes from high to low.

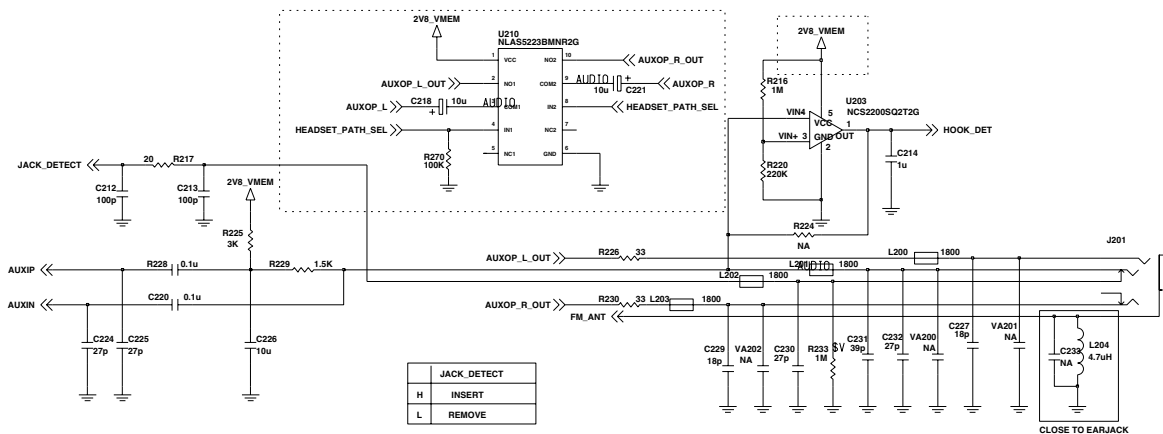
Audio path is switched from earphone to receiver by JACK\_DETECT interrupt.

## Hook detection

If hook-button is pressed, HOOK\_DETECT is changed from high to low.

This is detected by AUXADC2.

And then hook is detected.



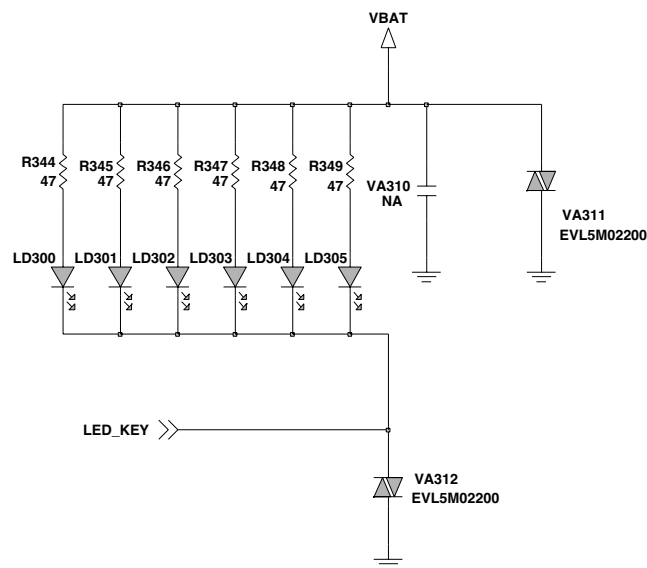
**Figure 3-14. HEADSET JACK INTERFACE**

### 3. TECHNICAL BRIEF

#### 3.13 Key Back-light Illumination

In key back-light illumination, there are 12 Blue LEDs in Main Board, which are driven by KEY\_BACKLIGHT signal from AD6721.

#### KEY BACKLIGHT

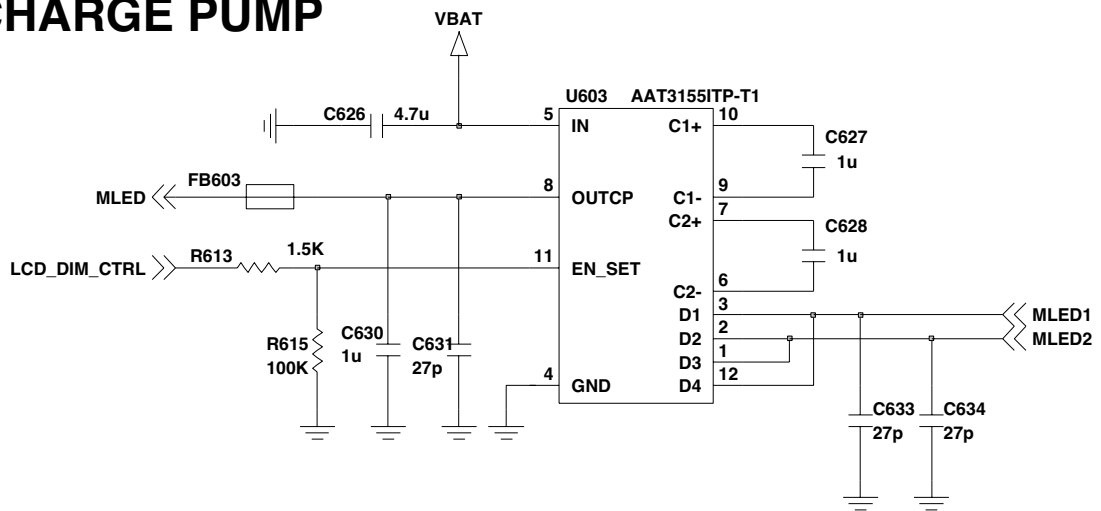


**Figure 3-15. KEY BACK-LIGHT ILLUMINTION**

### 3.14 LCD Back-light Illumination

LCD backlight LEDs is controlled by AD6721 via AAT3155, U603.

#### CHARGE PUMP



**Figure 3-16. MAIN LCD BACKLIGHT ILLUMINATION**

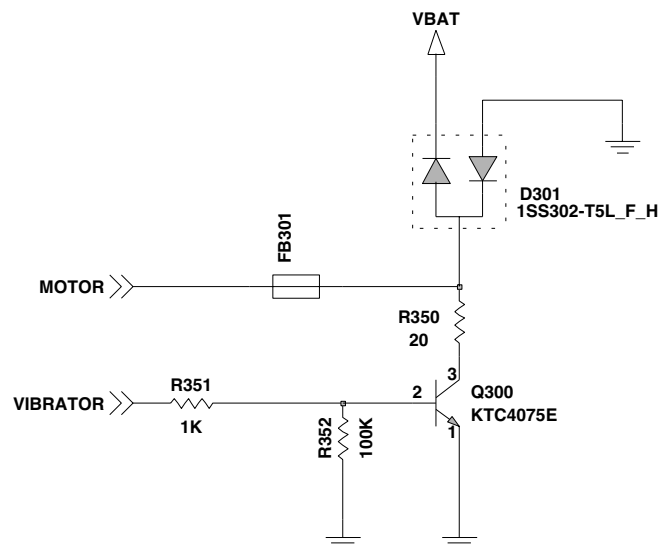
### 3. TECHNICAL BRIEF

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#### 3.15 VIBRATOR

The vibrator is placed in the sub PCB. The vibrator is driven from VIBRATOR (GPIO\_3) of AD6721

#### VIBRATOR



**Figure 3-17. MOTOR**

## 3.16 Bluetooth

### BT + FM RADIO

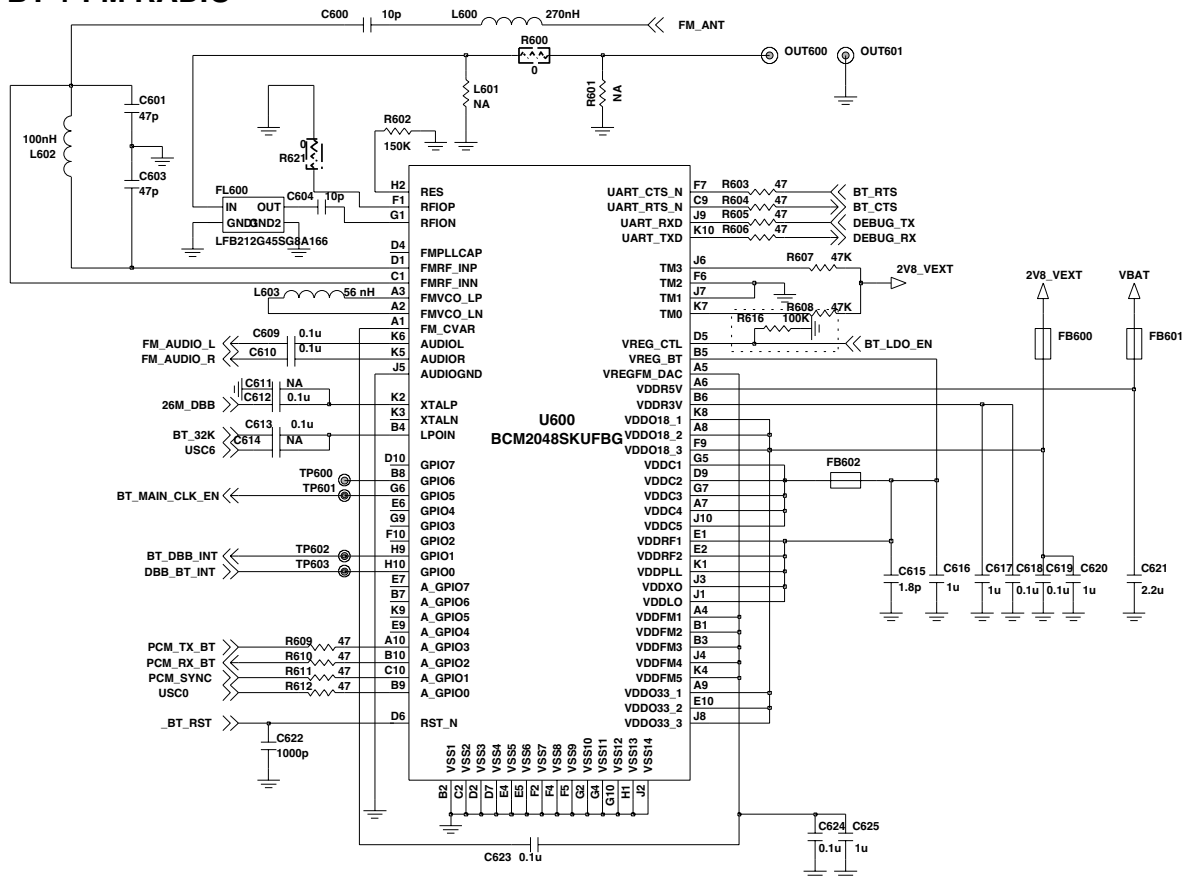


Figure 3-17. Bluetooth circuit

## 3. TECHNICAL BRIEF

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### 3.17 Circuit Description

#### ◆ Baseband Circuit Description

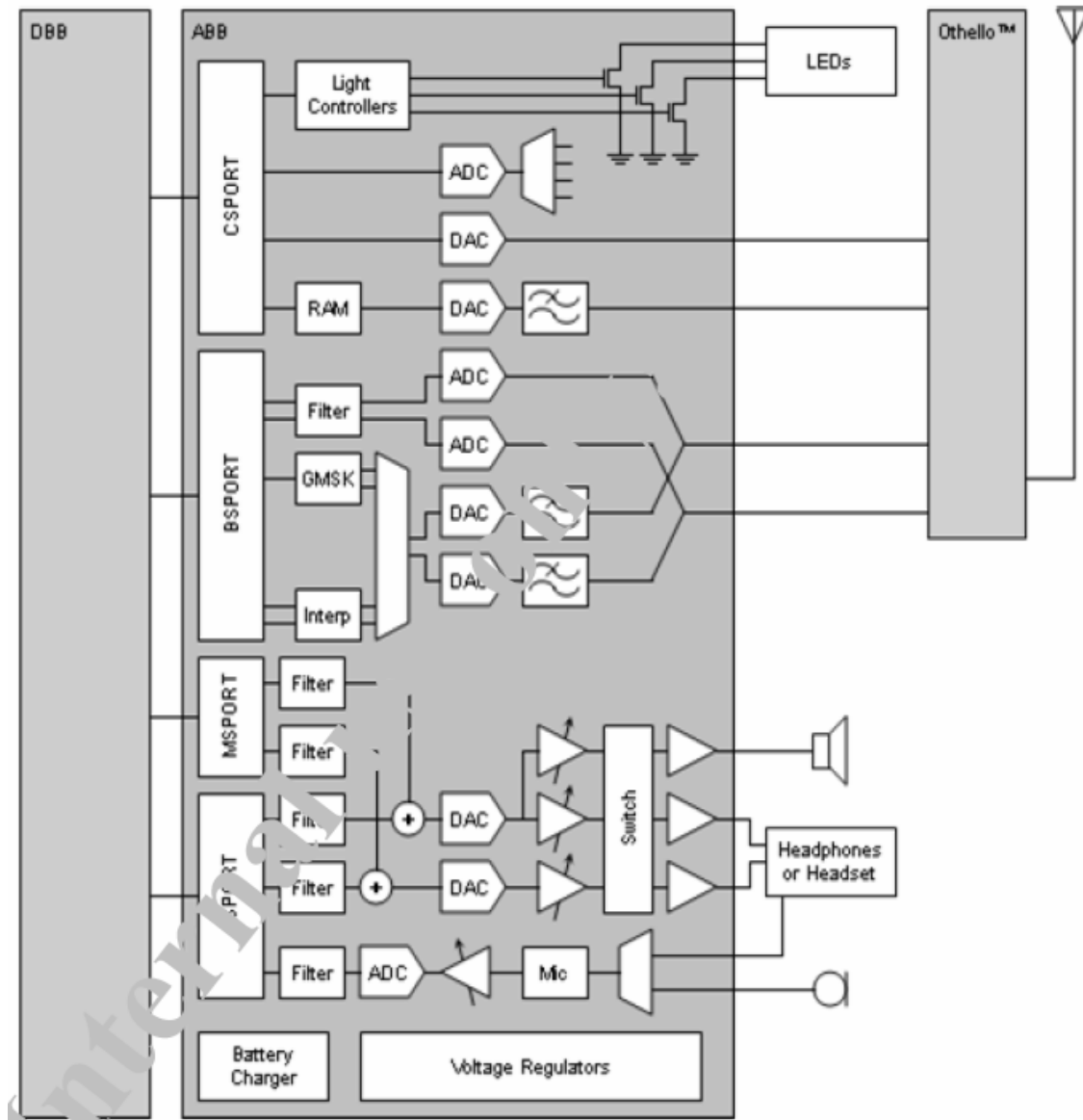
##### 1. Digital Baseband system ( AD6721 )

- Digital Baseband Processor - Atlas2H (AD6721)
  - ◆ MCU Subsystem
    - ARM7TDMI
    - 65MHz @ 1.8V
    - 16KBytes Cache
  - ◆ DSP Subsystem
    - 16-bit Fixed Point DSP Processor
    - 91 MIPS at 1.8V
    - 16Kword Data and 16Kword Program SRAM
    - 4Kword Program Instruction Cache
  - ◆ Peripheral Subsystem
    - Support for Burst and Page Mode Flash
    - Support for Pseudo SRAM
    - Ciphering module for GPRS supporting GEA1 and GEA2 encryption algorithms
    - Parallel and Serial Display Interface
    - 8x8 Keypad Interface
    - Four independent programmable backlights plus One Service Light
    - Universal System Connector Interface
    - Enhanced Generic Serial Port
    - Dedicated SPI interface

- ◆ Bus Arbitration
- ◆ 2 Mbits(256Kbytes) SRAM
- Memory Interface
  - A[0:23] - 24-bit width Address BUS ( Glue Logic used to A[23] Signal)
  - D[0:15] - 16-bit width Data BUS
  - \_WR, \_RD
  - \_ROMCS1, - Chip Select signals for Flash Memory
  - \_RAM\_CS1 - Chip Select signal for PSRAM
  - \_UBS, \_LBS
  - CLK, \_ADV, WAIT - for Burst Mode Flash Operation
- SIM Interface
  - ◆ SIMCLK
  - ◆ SIMDATA
  - ◆ SIM\_RESET
  - ◆ USB
  - ◆ USBDP/USBDM
- USC

### 3. TECHNICAL BRIEF

#### 2. Analog Main Processor (ABB part of AD6721)



- Baseband Transmit section

This Section is designed to support GMSK and 8-PSK for both single-slot and multislot applications. And it is generated in-phase and quadrature BB modulated GMSK & 8-PSK signals. The transmit channel consists of a digital GMSK & 8-PSK modulator, a matched pair of 10-bit DACs and a matched pair of reconstruction filter. The GMSK modulator which is used for GSM applications. And the 8-PSK modulator which is used for EDGE applications.

- Baseband Receive section

This section is designed to support GMSK and 8-PSK applications. And is consists of two identical ADC channels that process baseband in-phase and quadrature input signals. Each channel consists of a coarse switched capacitor input filter, followed by a highorder sigma-delta modulator and a low-pass digital filter.

- Auxiliary section

The AD6852 Auxiliary Section includes a Phase Locked Loop, Automatic Frequency Control (AFC) DAC, voltage reference buffers, an Auxiliary ADC, and light controllers.

- ◆ Low-Noise Voltage Reference and Voltage Reference Buffers

The AD6852 provides a low-noise voltage reference and several voltage buffers which produce isolated references. The REF voltage is directly used as a reference for analog voltage regulators. The REF voltage is used along with internal reference buffers to provide references for all of the AD6852 digital-to-analog and analog to-digital converters. The REFBB voltage is used as a reference for the baseband transmit and baseband receive section ADCs and DACs. The REFOUT voltage is provided for use with external devices. For example, the REFOUT voltage may be applied to measure crystal temperature using a thermistor. The REFCHG voltage is also provided for use with external devices. For example, the REFCHG voltage may be applied to measure battery temperature using a thermistor. The AD6852 provides automatic activation of the REFBB buffer. When the baseband transmit path or baseband receive path are active, the REFBB buffer is active.

- ◆ Automatic Frequency Control (AFC) DAC

The AD6852 AFC DAC is a 13-bit Sigma-Delta DAC that intrinsically does not exhibit differential nonlinearity. Input data stream is sent into converted via Control Serial Port. AFCDACM (0x16) and AFCDACL (0x17) registers allow to fetch in bits 15-6 and 9-0 respectively. In typical applications, the AFC DAC must often remain active while all other converters are idle. To minimize system supply current in this condition, the AFC DAC may operate with the master clock idle. The AFC DAC uses a low-power internal oscillator to maintain a stable output voltage based on the last digital input value.

### 3. TECHNICAL BRIEF

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#### ◆ Temperature Sensing System

The AD6852 includes voltage reference buffers and Auxiliary ADC inputs for measuring the temperature of the system oscillator crystal (to compensate for temperature variations) and the battery temperature (for charging applications). Each of these external temperatures may be measured using an external thermistor in series with an external resistor. The temperature ranges are based on the requirements of 3GPP TS 51.010-1 version 5.2.1 Release 5 (2003-02), Annex 1 (normative): Reference test methods, A1.2: Normal and extreme Test Conditions (TC). The more narrow temperature span, + 15 °C to + 80 °C, provides for a difference between operating temperature and ambient temperature under normal test conditions of up to 45 °C. There are two temperature measurement channels available, TEMP1 and TEMP2. TEMP1 is chosen if the BatTempCh bit in the AuxControl2 register (0x14) is set low. TEMP2 is chosen if the bit is high.

#### ◆ Auxiliary Section Control Registers

The AD6852 Auxiliary ADC digital interface provides a method for making a single Auxiliary ADC measurement and a method for updating the battery condition. If a single Auxiliary ADC measurement is desired, the Auxiliary ADC channel can be selected and the Auxiliary ADC enabled. After the conversion is complete the interrupt is asserted. The result can be read from the AuxADCM (0x18 ) and AuxADCL (0x19 ) registers. If the battery condition update is desired, the BatCondition bit in the AuxControl2 register should be set. The battery condition is determined by reading the BatCondM (0x1A ) and BatCondL (0x1B ) registers four times.

#### ◆ Light Controllers

The AD6852 Auxiliary Section provides three independent PWM light controllers. The PWM output controllers regulate the average current through active lights.

Minimum Output Frequency  $f_{MCLK} / 262144$  Hz

Maximum Output Frequency  $f_{MCLK} / 256$  Hz

The output frequencies of the LIGHTx PWM output controllers are set by the Light12Period (0x2F ) and Light3Period (0x31 ) control registers.

With  $f_{MCLK} = 13$  MHz, frequencies ranging from 50.781 kHz to 49.591 Hz may be specified.

$f_{LIGHT1} = ( f_{MCLK} / 256 ) / ( \text{Light12Period}[9:0] + 1 )$

$f_{LIGHT2} = ( f_{MCLK} / 256 ) / ( \text{Light12Period}[9:0] + 1 )$

$f_{LIGHT3} = ( f_{MCLK} / 256 ) / ( \text{Light3Period}[9:0] + 1 )$

- Audio section

This section supports communications and personal audio applications. The audio section provides an audio codec with two digital-to-analog converters and an analog-to-digital converter, a ring tone volume controller, a microphone interface, and analog input and output channels.

- ◆ Audio Codec

The AD6852 audio codec supports communications applications with digital sample rates of 8 kHz or 16 kHz. DAC 1 is used for receiving speech. An ADC is used for sending speech.

The AD6852 audio codec supports personal audio applications with digital sample rates of 8 kHz, 11.025 kHz, 12 kHz, 16 kHz, 22.05 kHz, 24 kHz, 32 kHz, 44.1 kHz, or 48 kHz. DAC 1 and DAC 2 are used for monophonic audio. The channels are common in the digital section. DAC 1 and DAC 2 are used together for stereo audio, with DAC 1 decoding the left-channel digital input and DAC 2 decoding the right-channel digital input. Audio codec operating modes can be controlled by writing 5 bit codes in the AudMode field of the AudControl1 register and in the AudMode field of the AudControl4 register. AudControl1 programs the sampling rate and stereo or monophonic operating mode for PCM audio samples input via the ASPORT.

AudControl4 programs the sampling rate and stereo or monophonic operating mode for PCM audio samples input via the MSPORT. Receive audio signal from MIC. LG-G832 is used differential configuration. Send audio signal to Receiver. LG-G832 is used differential configuration.

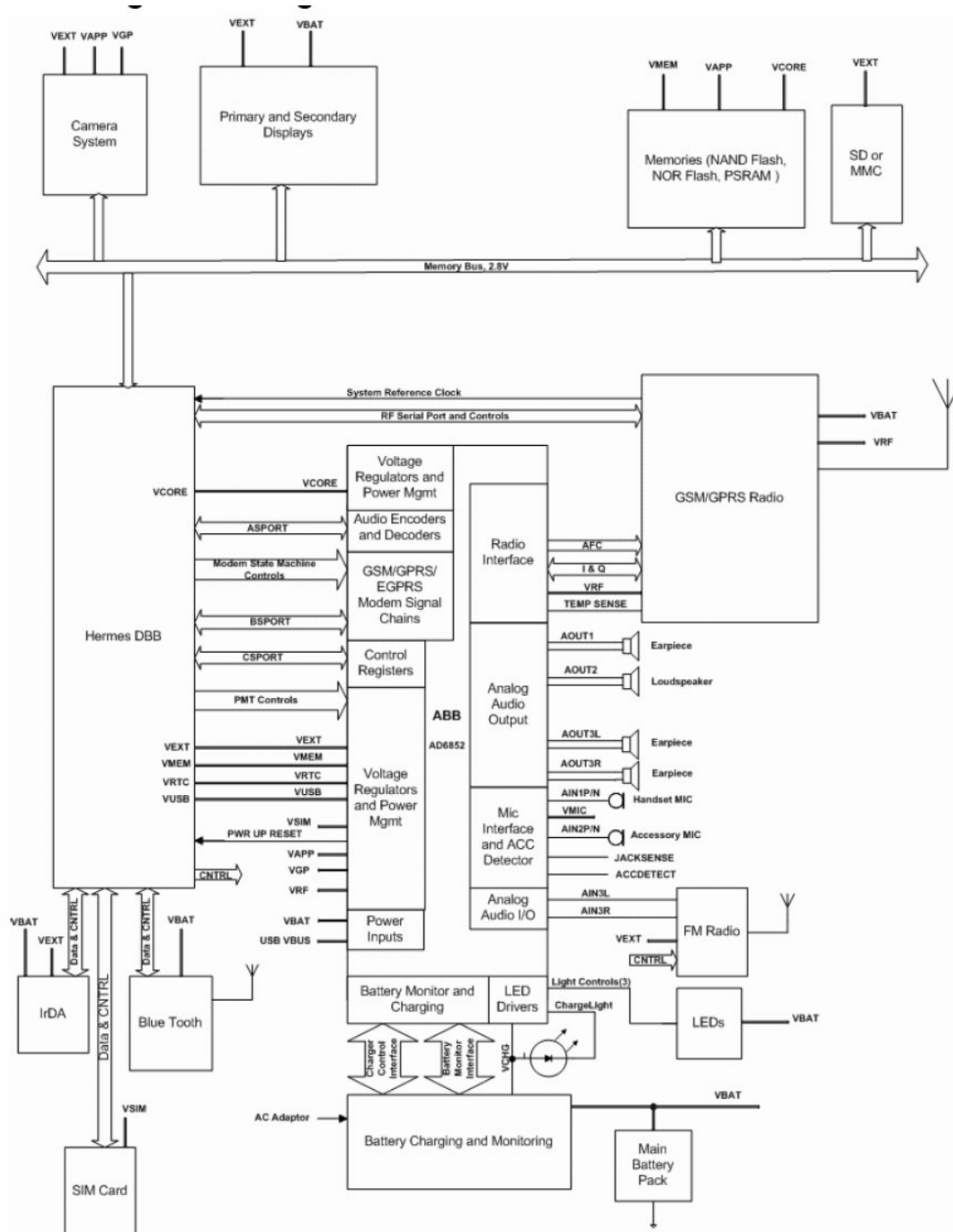
It is interconnected with external device like main microphone, main receiver, speaker and headset through the AIN1P, AIN1N, AOUT1P, AOUT1N, , AOUT2P1/2, AOUT2N1/2, AIN2P, AIN2N, AOUT3R, AOUT3L.

AIN1P, AIN1N : Main MIC positive/negative terminal AOUT1P, AOUT1N : Main Receiver positive/negative terminal. AOUTAOUT1N goes to main receiver through the SPDT AOUT2P1/2, AOUT2N1/2: Main Speaker positive/negative terminal. AOUT2P1/2, AOUT2N1/2 go to speaker through WM8951 and SPDT.

AIN2P, AIN2N : Headset MIC positive/negative terminal.

### 3. TECHNICAL BRIEF

- Power Management Section



**Figure 4. AD6721 Voltage Regulator Assignments**

#### ◆ Voltage Regulators

##### - DBB Core Voltage Supply

The VCORE regulator is designed to be used as the core power supply for the DBB. With the Hermes DBB its use is always appropriate. If the AD6721 VAPPCFG terminal is pulled up to the main battery the pass device supply VAPP operates as a Core supply and can be used for this purpose. Using VAPP as the core supply in this manner has three advantages. This mode frees up the VCORE regulator for other applications such as use as a 1.8V memory supply. VAPP is dynamically scalable that is its voltage can be changed as DBB clock frequencies are scaled. And use of VAPP off loads power dissipation from the ABB to the pass device. This can be important in power budgeting (see the Power Dissipation Budgeting Procedure section below).

##### - Serial Peripheral Supply

The nominal 2.8V VEXT regulator is meant to be a power supply used by various peripheral devices in a handset. In the example shown in Figure 4 VEXT is a digital I/O supply for the displays and the camera, a supply for the FM radio IC, and an I/O supply for the IrDA transceiver. PSRAM, SRAM, NAND/NOR Flash Memory, SD/MMC, and DBB Memory Bus Supplies In the example shown in Figure 4 the stack memory device uses the VMEM (at 2.8V) supply, VCORE and the pass device VAPP supply. The SD or MMC card uses the VEXT supply. In the example VAPP is programmed to be 1.8V nominal. Stack memory devices will have an SRAM, or PSRAM and one or two types of Flash memory, NAND flash and/or NOR flash. Stack memory devices will have a separate supply rail for each memory chip in the stack. The VCORE, VMEM and VAPP pass device regulator are all appropriate choices for use as memory supplies.

##### DBB USB Transceiver Supply

The VUSB regulator supplies power to the USB transceiver in the DBB. Its input is the USB VBUS line.

##### - Camera Supplies

In the example in Figure 4 the camera module has three supply rails. VGP set to 2.8V is the camera analog supply used to power the camera's sensor. VEXT is used as the I/O supply. And VAPP set to 1.8V is the camera digital supply. The camera module used in the example is a type that does both image sensing and image processing. VGP and VAPP are both programmable voltage supplies.

### 3. TECHNICAL BRIEF

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- SIM Card Supply

The SIM card supply is the VSIM regulator. This regulator has been designed to meet the power supply standards established for SIM Cards.

- Microphone Power

The VMIC regulator is designed to act as a phantom bias supply for electret microphones used in handsets and headset accessories. TDMA noise immunity is a design feature of the VMIC regulator. VMIC features low output noise in the voice audio band and should be the only supply used for microphone bias.

- Radio Reference Oscillator Power

The VRF regulator is a low output noise supply with a specified TDMA ripple rejection. It is designed to be the power supply for the system reference oscillator in the radio subsystem.

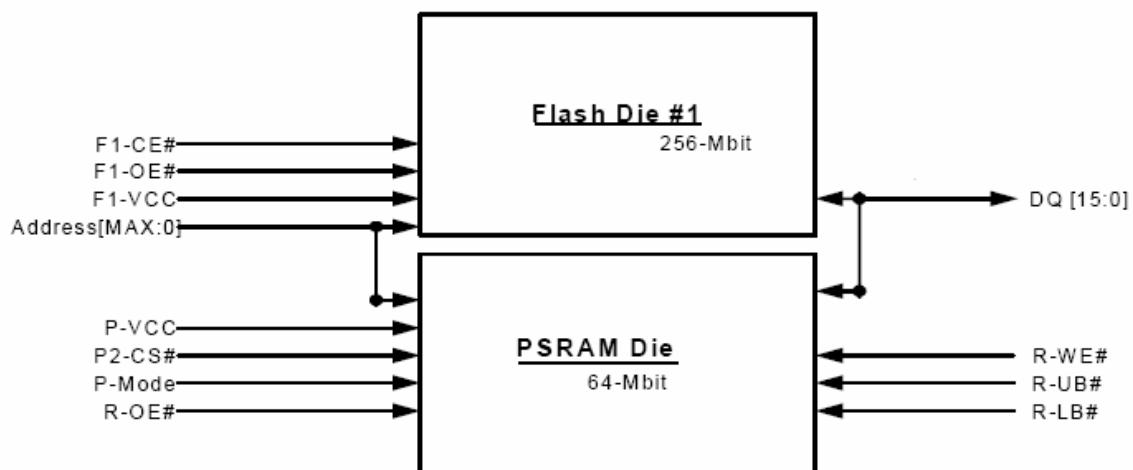
- DBB Real Time Clock Power

The VRTC regulator is included for the purpose of powering the DBB time of day clock (RTC). A recommended backup circuit for use with VRTC is described in the section below.

- ABB Analog Supply

The ABB analog circuit supply VABB is for use by the AD6721 ABB only. The sole connection to the VABB terminal should be the recommended bypass capacitor. The VABB regulator may not be utilized by any devices other than the ABB IC.

### 3. MCP Memory PF38F4050L0ZBQ0 (INTEL )

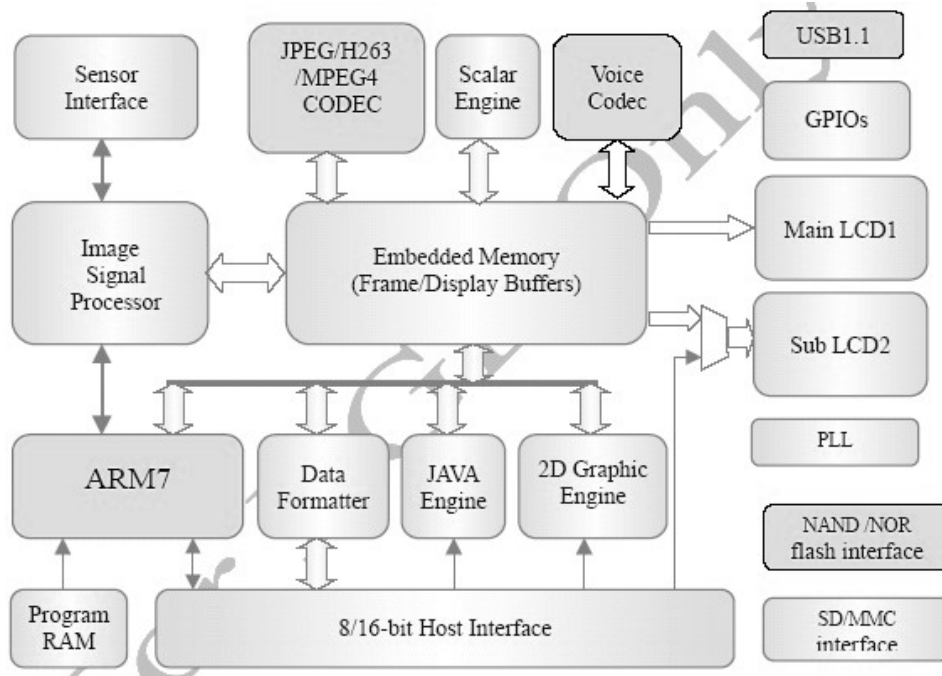


- 256 Mbits NOR Flash
  - ◆ High performance Read-While-Write/Erase
    - 85 ns initial access
    - 52 MHz with zero wait state, 17 ns clock-to-data output synchronous-burst mode
    - 25 ns asynchronous-page mode
    - 4-, 8-, 16-, and continuous-word burst mode
    - Programmable WAIT configuration
    - Buffered Enhanced Factory Programming (BEFP) at 5  $\mu$ s/byte (Typ)
    - 1.8 V low-power buffered programming at 7  $\mu$ s/byte (Typ)
  - ◆ Architecture
    - Asymmetrically-blocked architecture
    - Multiple 8-Mbit partitions: 64-Mbit and 128-Mbit devices
    - Multiple 16-Mbit partitions: 256-Mbit devices
    - Four 16-Kword parameter blocks: top or bottom configurations
    - 64-Kword main blocks
    - Dual-operation: Read-While-Write (RWW) or Read-While-Erase (RWE)
    - Status register for partition and device status
  - ◆ Power
    - VCC (core) = 1.7 V - 2.0 V
    - VCCQ (I/O) = 2.2 V - 3.3 V
    - Standby current: 30  $\mu$ A (Typ) for 256-Mbit
    - 4-Word synchronous read current: 16 mA (Typ) at 52 MHz
    - Automatic Power Savings mode
- 64 Mbits PSRAM
  - ◆ Device Voltage
    - Core: VCC = 1.8 V (Typ)
    - I/O: VCCQ = 1.8 V or 3.0 V (Typ)
  - ◆ PSRAM Performance
    - 70 ns initial access, 25 ns async page read at 3.0V I/O (16-Mbit PSRAM)
    - 65 ns initial access, 18 ns async page reads at 3.0V I/O

### 3. TECHNICAL BRIEF

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#### 4. Multimedia Process IC - AI813G

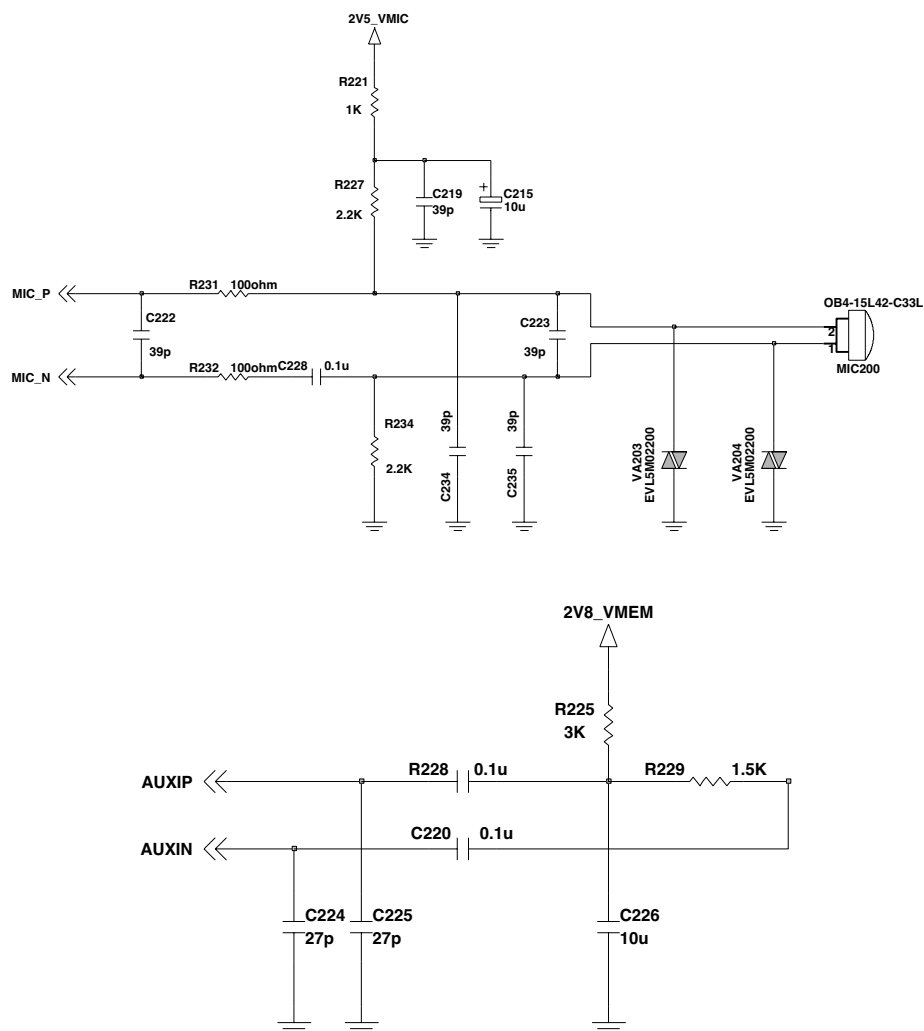


- On-chip Advance Image Processor
  - Max. Image Resolution: 1280(H) \* 1024(V)
  - Generic Sensor Interface supports: 1.3M/VGA/QVGA CMOS sensors Supports
  - Support Linear (fine steps) Zoom
  - Advanced DV functions
  - Built-in MPEG4 and H263 Compression/Decompression Engine
  - Built-in real-time JPEG Compression/Decompression Engine:
  - Advanced Hardware Color DSP for Image Processing:
- On-chip LCD Controller supports
  - Dual panels: main and sub
  - Max. Display Resolution: 176\*220 with 260K color
- Voice/Audio Functions
  - Embedded Audio Codec support: AMR record/playback , AAC/MP3 playback
  - Support digital (through serial bus) outputs for MP3 audio.

#### 5. Microphone

The main microphone is soldered to the main PCB. The audio signal is passed to AIN1P(#P16), AIN1N(#R16), AIN2P(#P15) and AIN2N(#R15) pins of AD6721.

The voltage supply 2V5\_VMIC is output from AD6721. The voltage supply 2V5\_JACK is output from BH25FB1WHFV (Low Drop Output). The VIN1 and VIN2 signals are A/D converted by the Voiceband ADC part of AD6721. The digitized speech is passed to the DSP section for processing(coding, interleaving etc.) The Microphone interface is shown in Figure 4.

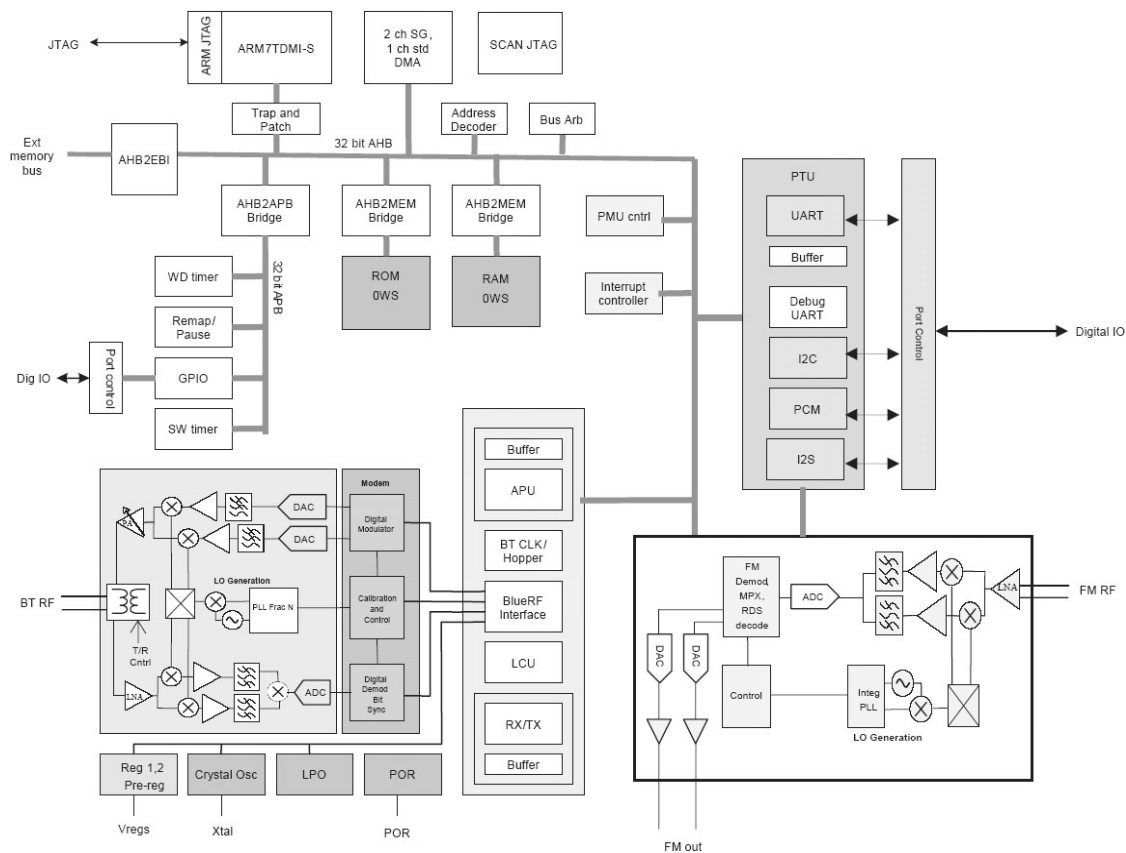


**Figure 5. Microphone(main & aux)**

## 6. Headset Jack Interface

This phone is 4-pole type earphone jack, which has four electrodes such as L.SPK, R.SPK, MIC+ and GND. This type usually supports single-ended configuration in the audio input path, and differential or stereo configuration in the audio output path. So this phone uses single-ended audio input and stereo audio output. But when the audio input signal is entered an AD6721, it is likely to differential signal. When headset jack is put in and pressed the hook-switch of headset, the HOOK\_DETECT signal is goes to high, then the hook-switch is detected

## 7. Bluetooth & FM Radio (BCM2048)



### 3. TECHNICAL BRIEF

---

Monolithic single-die integration of Bluetooth and FM Radio Bluetooth specification version 2.0+EDR compliant with provisions for future specification Integrated InConcert™ collaborative WLAN coexistence, including 802.15.2 three-wire coexistence support ARM7TDMI-S-based microprocessor with integrated 192KB ROM and 40KB RAM Integrated FM and RDS/RBDS receiver with only one external capacitor, one external inductor and optional antenna matching unit 76MHz to 108MHz FM bands supported (US, Europe, and Japan)

Excellent FM Radio performance with 1µV sensitivity for 26dB (S+N)/N RDS and RBDS demodulator and decoder with filter and buffering functions Automatic frequency detection for standard crystal and TCXO values Low Power Consumption FM signal dependent mono/stereo blend along with soft mute control FM auto search and tuning function with RSSI and status indicator

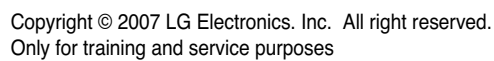
### 3. TECHNICAL BRIEF

---

#### 8. TA /USB Charging (ISL6299)

The ISL6299 is a fully integrated low-cost single-cell Li-ion or Li-polymer battery charger. The charger accepts two power inputs, normally one from a USB (Universal Serial Bus) port and the other from a desktop cradle. The ISL6299 is an ideal charger for smart handheld devices that need to communicate with a personal computer via USB.

The ISL6299 features 28V and 7V maximum voltages for the cradle and the USB inputs respectively. Due to the 28V rating for the cradle input, low-cost, large output tolerance adapters can be used safely. When both inputs are powered, the cradle input is used to charge the battery. The charge current is programmable for the cradle input with a small resistor. The end-of-charge current for the cradle input is also programmable by another external resistor. The charger incorporates Thermaguard™ which protects the IC against over temperature. If the die temperature rises above a typical value of 100C, a thermal foldback function reduces the charge current automatically to prevent further temperature rise. The charger preconditions the battery with low current when the battery voltage is below 2.6V. The charger has two indication pins. The PPR (power present) pin outputs an open-drain logic LOW when either the cradle or the USB input power is attached. The CHG (charge) pin is also an open-drain output that indicates a logic LOW when the charge current is above a minimum current level. When the charge current is below the minimum current, the CHG pin indicates a logic HIGH signal and the status is latched. The latch will be reset at one of these events: (1) the part is disabled and re-enabled; (2) the selected input source has been removed and re-applied, (3) The USBON turns LOW, or (4) The BAT pin voltage falls below the CV mode threshold.

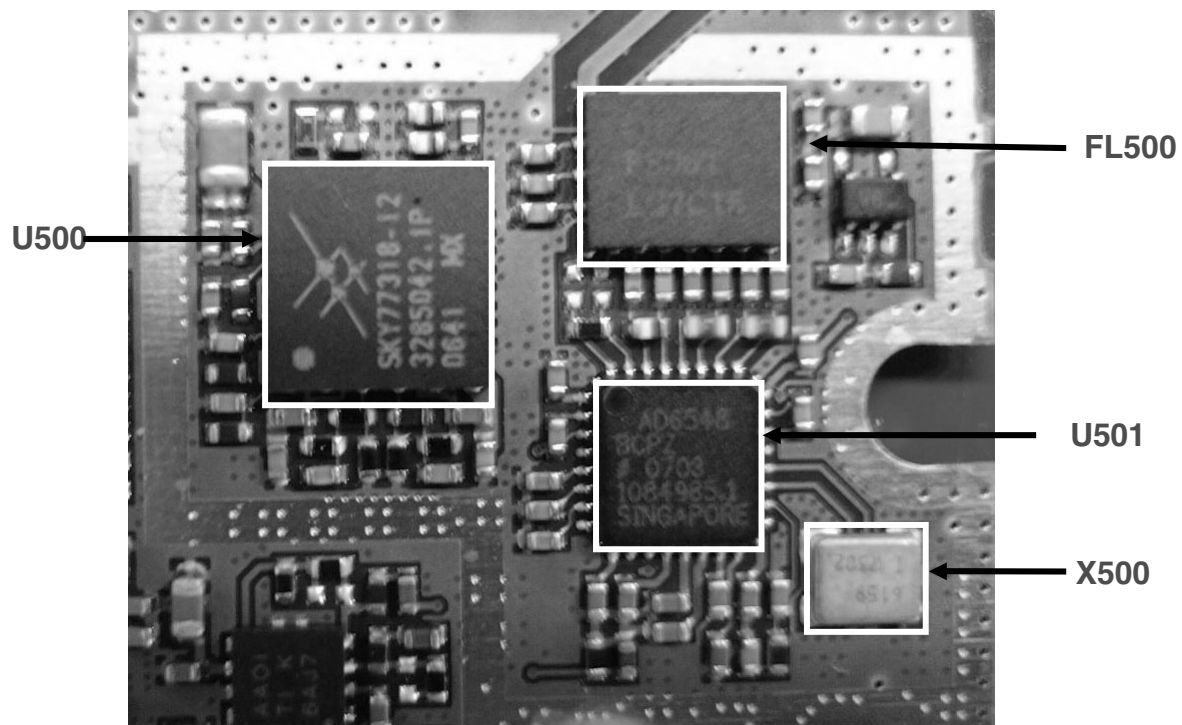


## 4. TROUBLE SHOOTING

## 4. TROUBLE SHOOTING

### 4.1 RF Component

#### TEST POINT

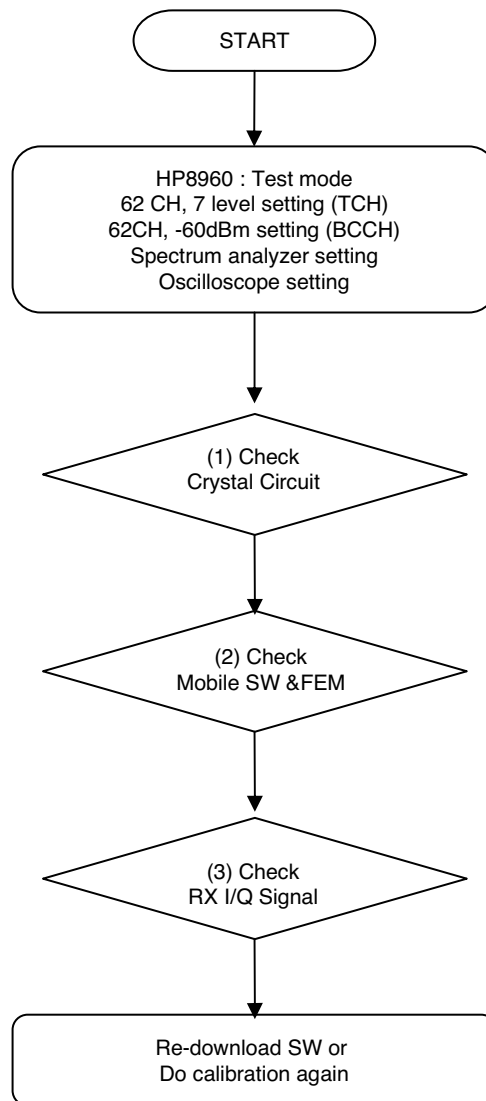


**Figure 4.1**

<b>U500</b>	Power Amp Module (SKY77318)
<b>U501 (AD6548)</b>	RF Main Chip (Transceiver)
<b>X500</b>	Crystal, 26MHz Clock
<b>FL500</b>	FEM

### 4.2 RX Trouble

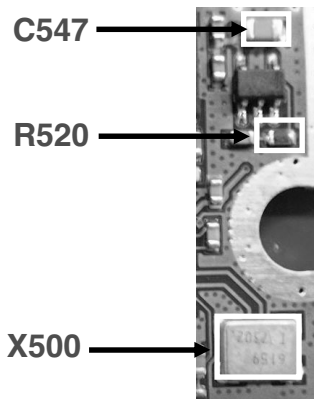
#### CHECKING FLOW



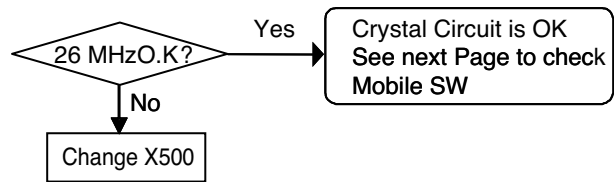
## 4. TROUBLE SHOOTING

### (1) Checking Crystal Circuit

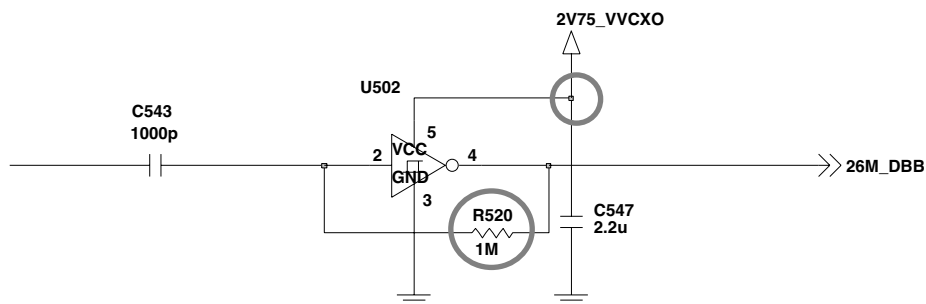
#### TEST POINT



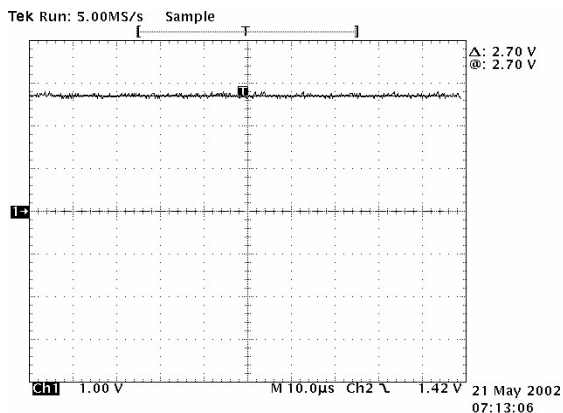
#### CHECKING FLOW



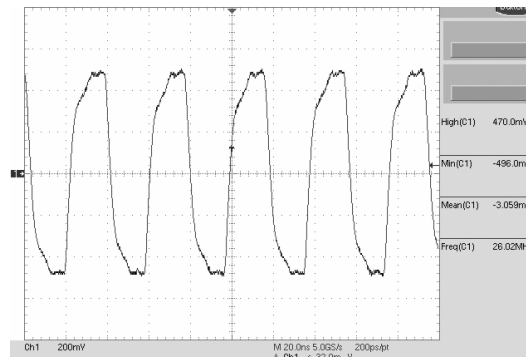
#### CIRCUIT



#### WAVEFORM



Graph 4.2.1(a)

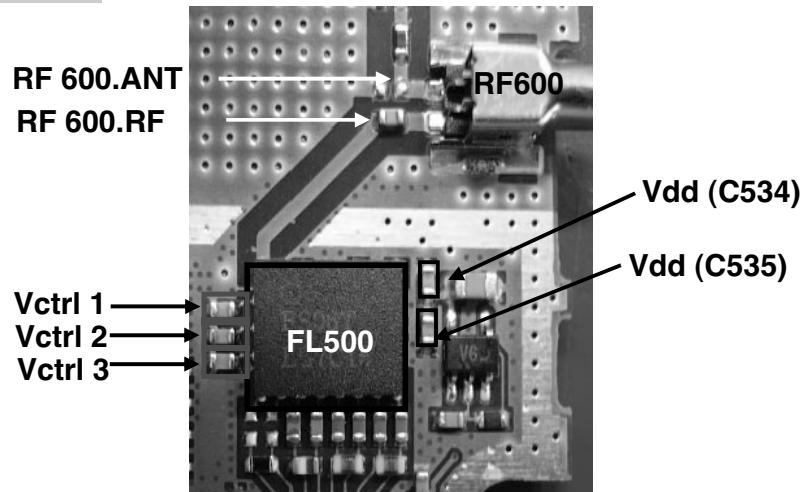


Graph 4.2.1(b)

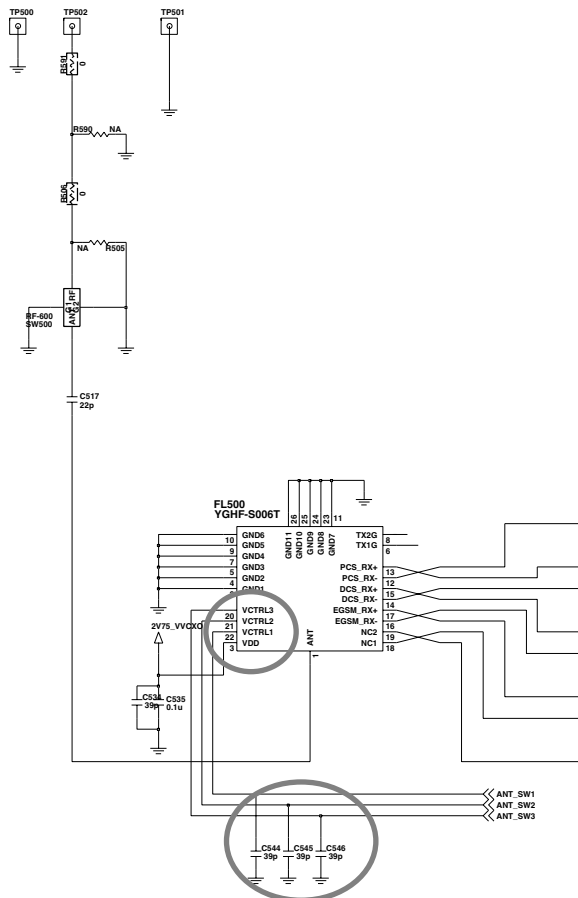
## 4. TROUBLE SHOOTING

### (2) Checking Mobile SW & FEM

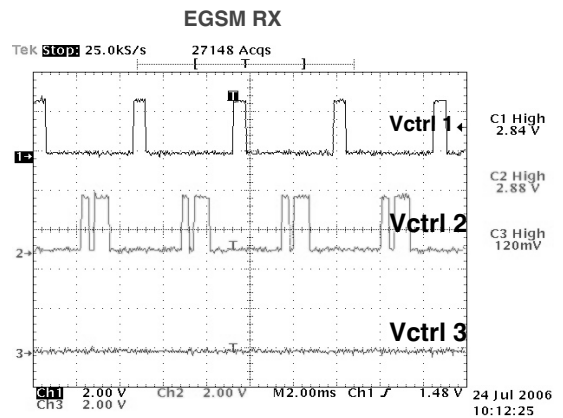
#### TEST POINT



#### CIRCUIT



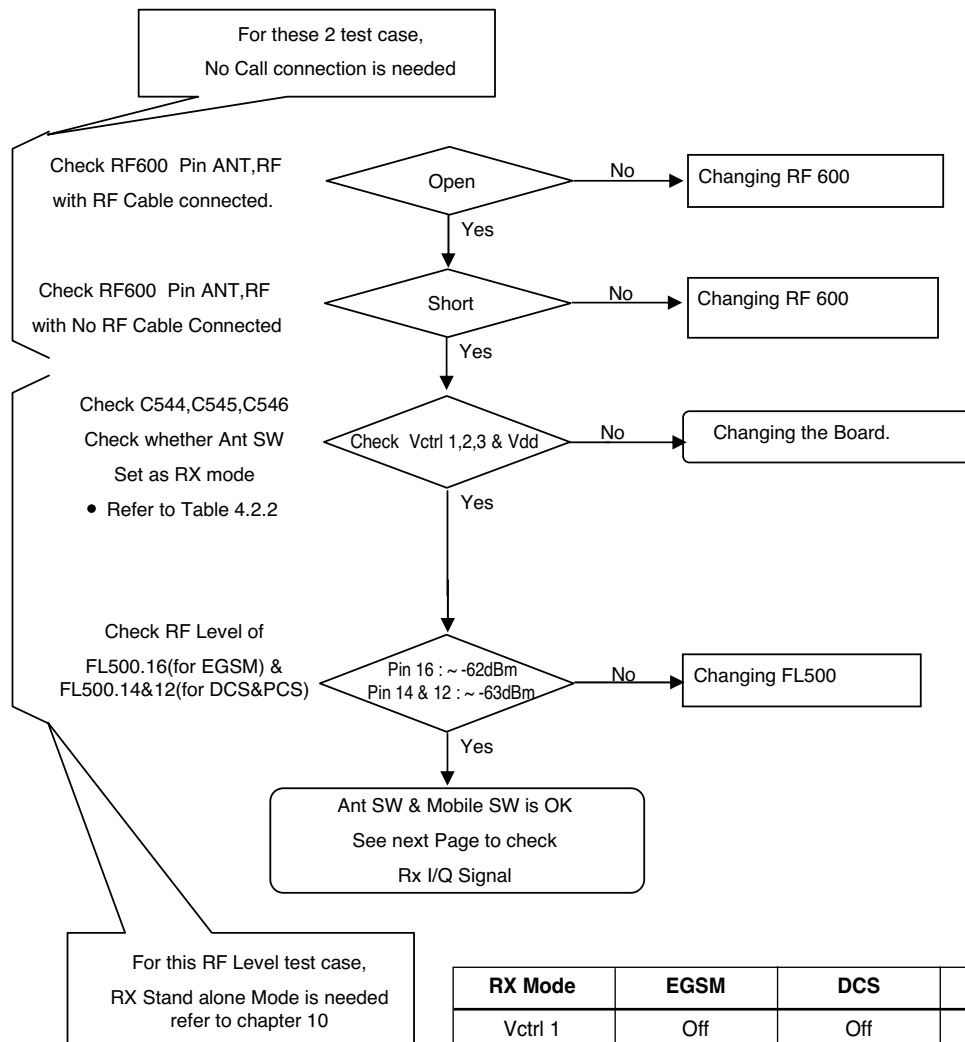
#### WAVEFORM



Graph 4.2.2 FEM Control Signal

## 4. TROUBLE SHOOTING

### CHECKING FLOW



RX Mode	EGSM	DCS	PCS
Vctrl 1	Off	Off	Off
Vctrl 1	On	Off	Off
Vctrl 3	Off	On	Off

Table 4.2.2

## 4. TROUBLE SHOOTING

### (3) Checking RX I/Q

#### TEST POINT

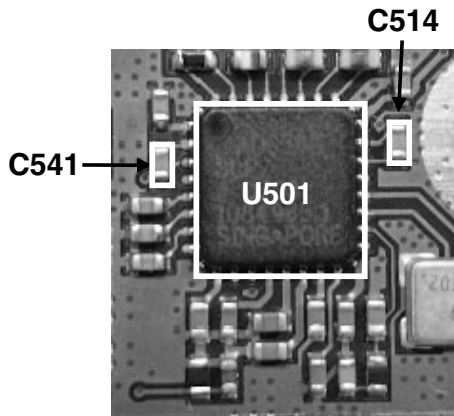
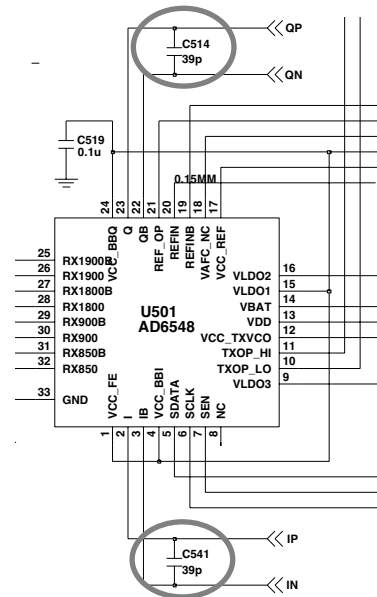
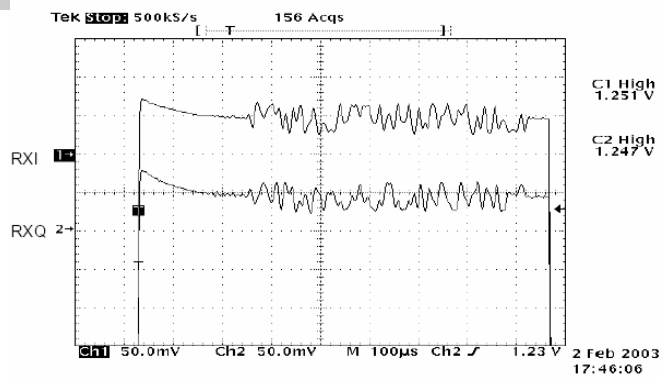


Figure 4.2.3

#### CIRCUIT



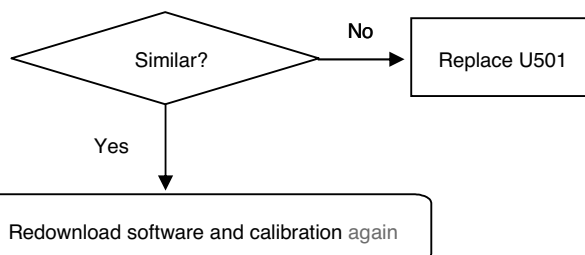
#### WAVEFORM



Graph 4.2.3

#### CHECKING FLOW

Check C514, C541.  
Check if there is any  
Major difference  
Refer to graph 4.2.3

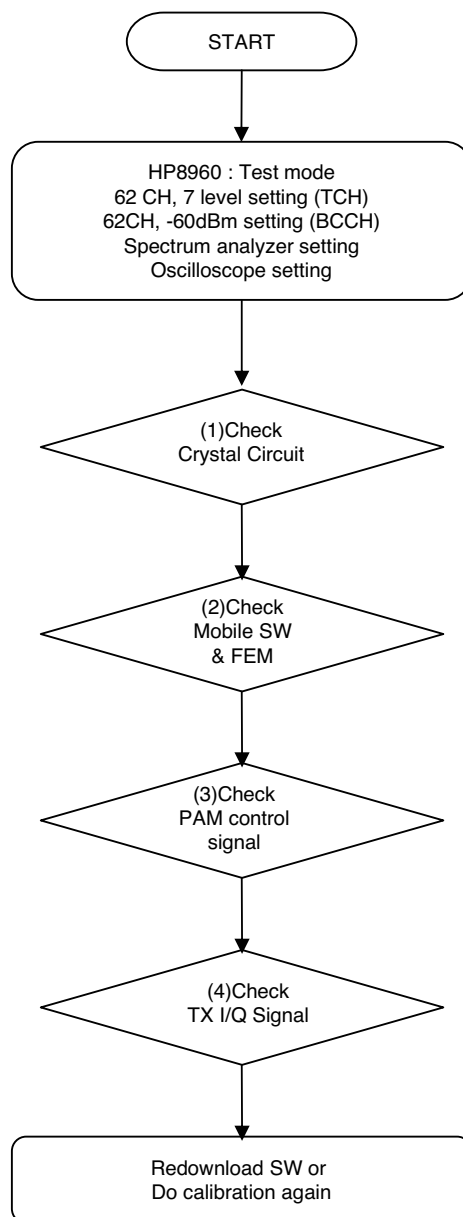


## 4. TROUBLE SHOOTING

---

### 4.3 TX Trouble

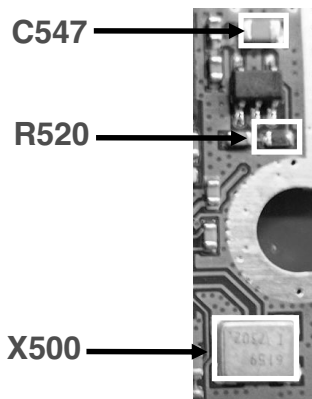
#### Checking Flow



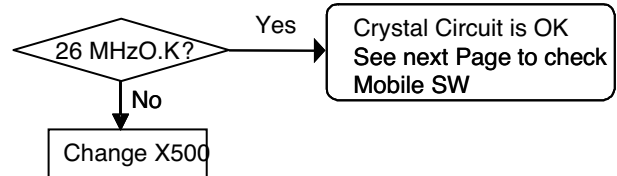
## 4. TROUBLE SHOOTING

### (1) Checking Crystal Circuit

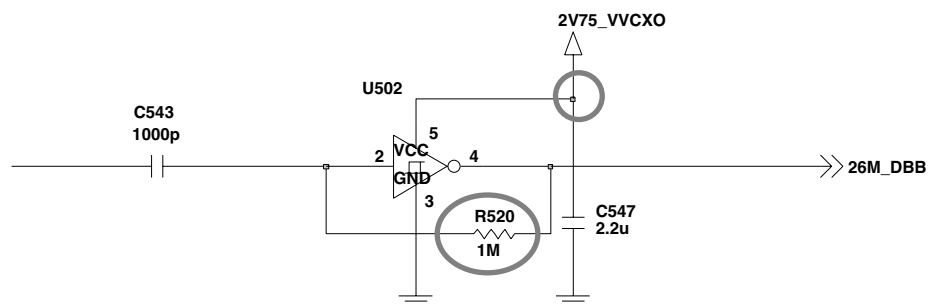
#### TEST POINT



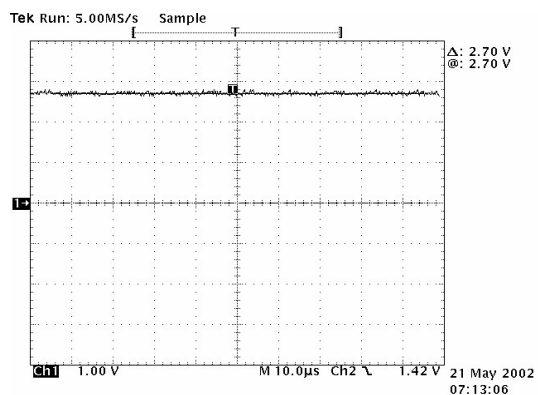
#### CHECKING FLOW



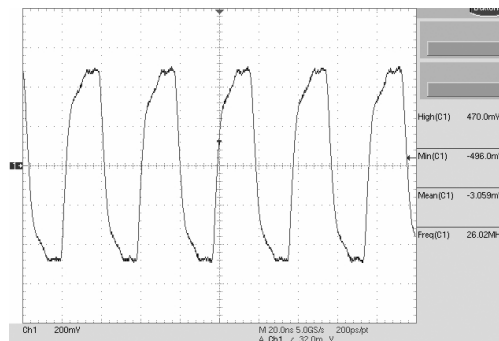
#### CIRCUIT



#### WAVEFORM



**Graph 4.3.1(a)**

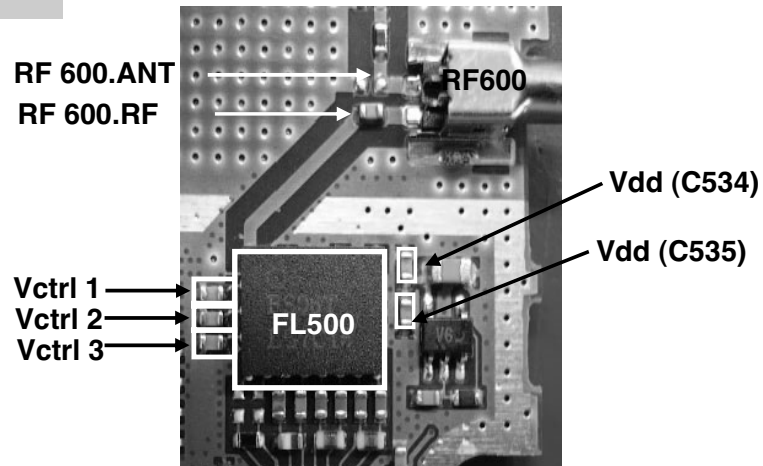


**Graph 4.3.1(b)**

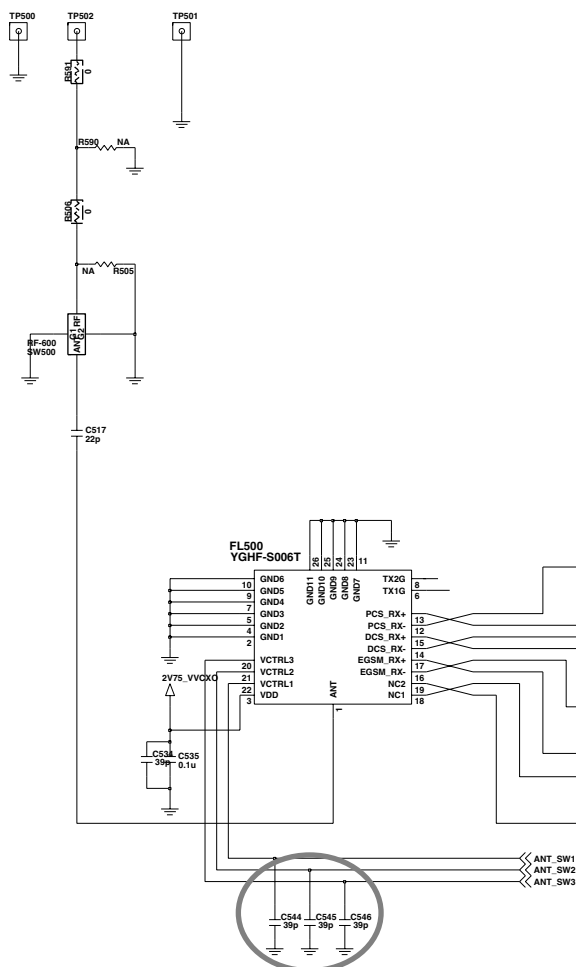
## 4. TROUBLE SHOOTING

### (2) Checking Mobile SW & FEM

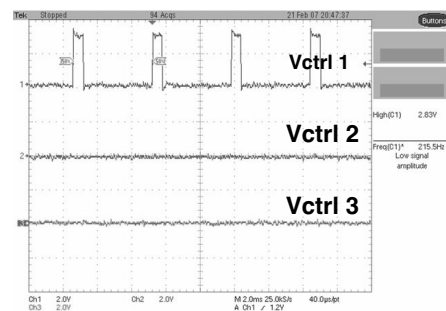
#### TEST POINT



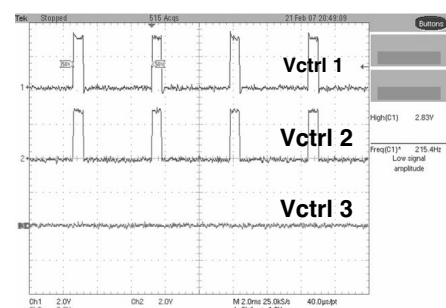
#### CIRCUIT



#### Waveform

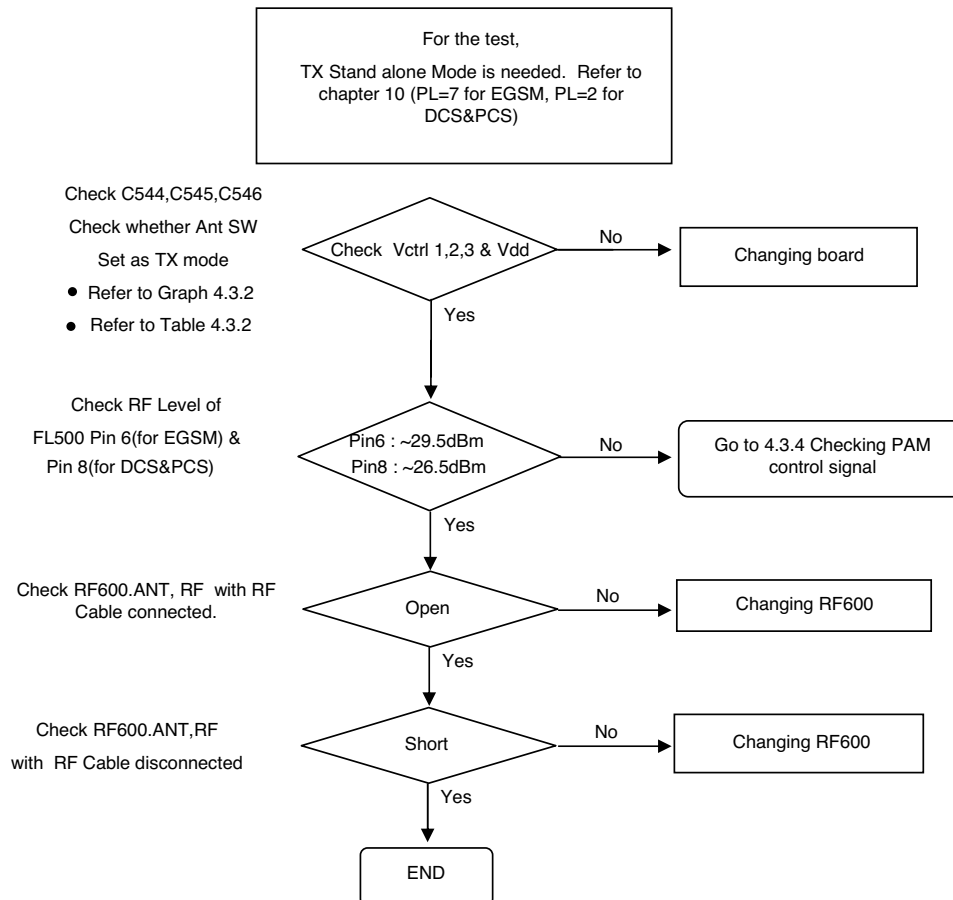


Graph 4.3.2(a) GSM Tx mode



Graph 4.3.2(b) DCS, PCS Tx mode

### Checking Flow



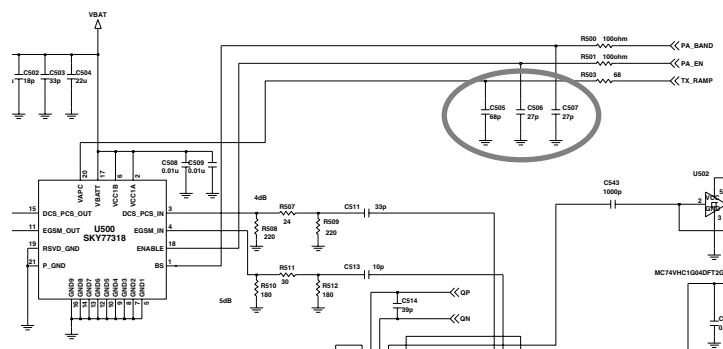
TX Mode	EGSM	DCS/PCS
Vctrl 1	On	On
Vctrl 2	Off	On
Vctrl 3	Off	Off

**Table 4.3.2**

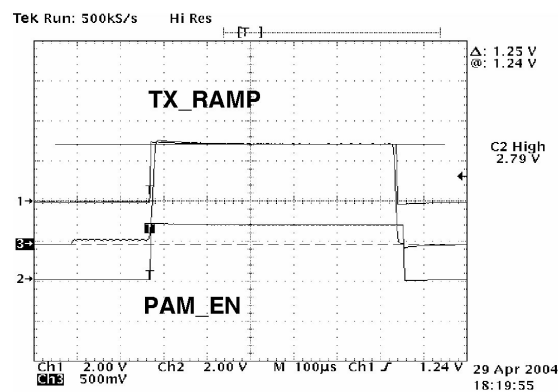
### TEST POINT



## CIRCUIT

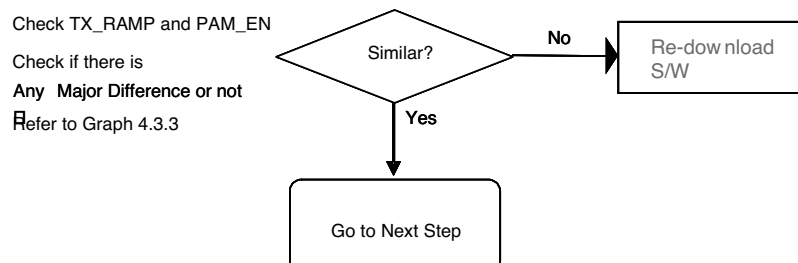


## Waveform



**Graph 4.3.3**

## Checking Flow



## 4. TROUBLE SHOOTING

### (4) Checking TX I/Q

#### TEST POINT

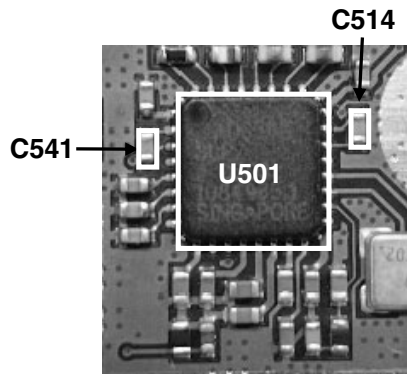
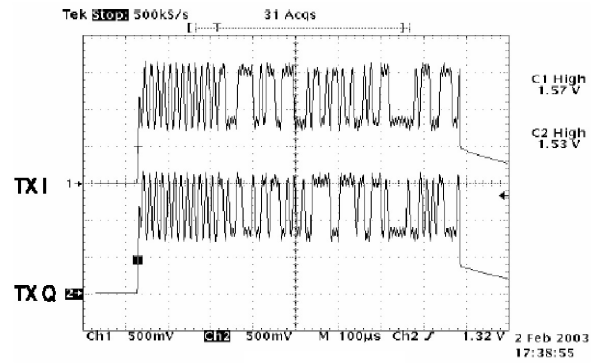


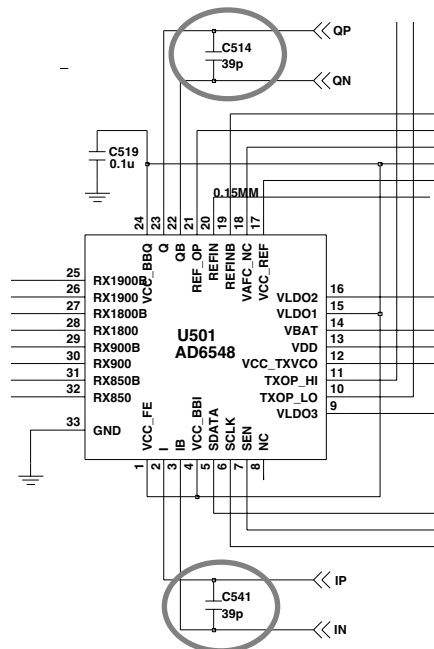
Figure 4.3.4

#### Waveform



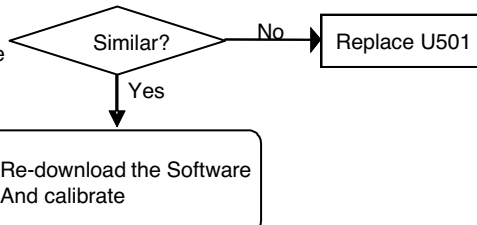
Graph 4.3.4

#### CIRCUIT



#### Checking Flow

Check if there is  
Any Major Difference  
Refer to Graph4.3.4



## 4. TROUBLE SHOOTING

### 4.4 Power On Trouble

#### TEST POINT

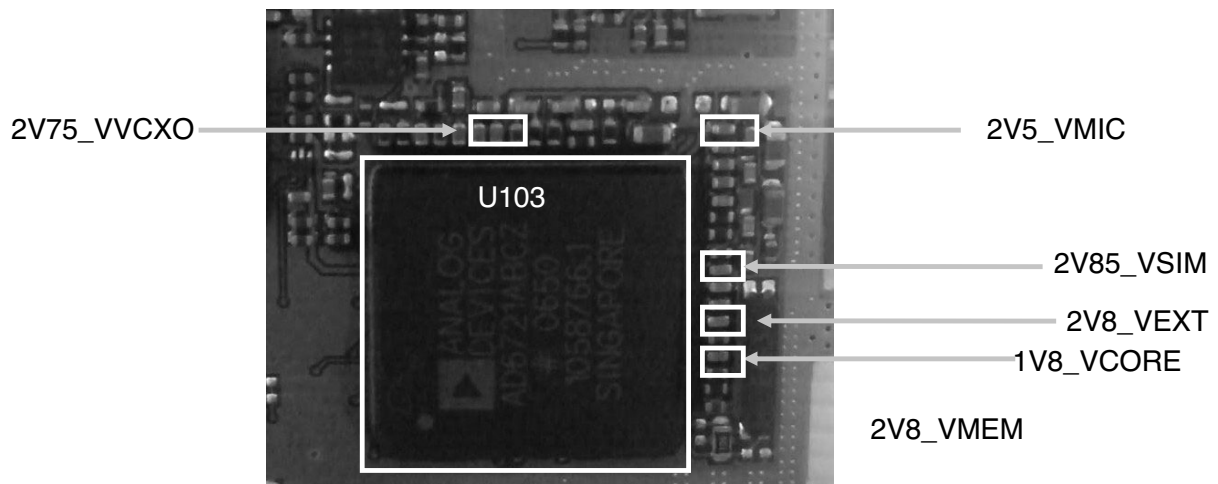
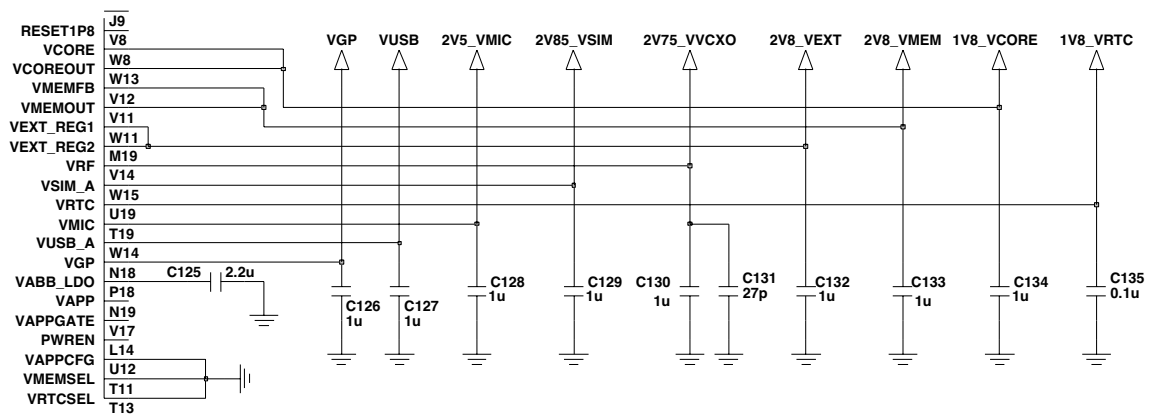
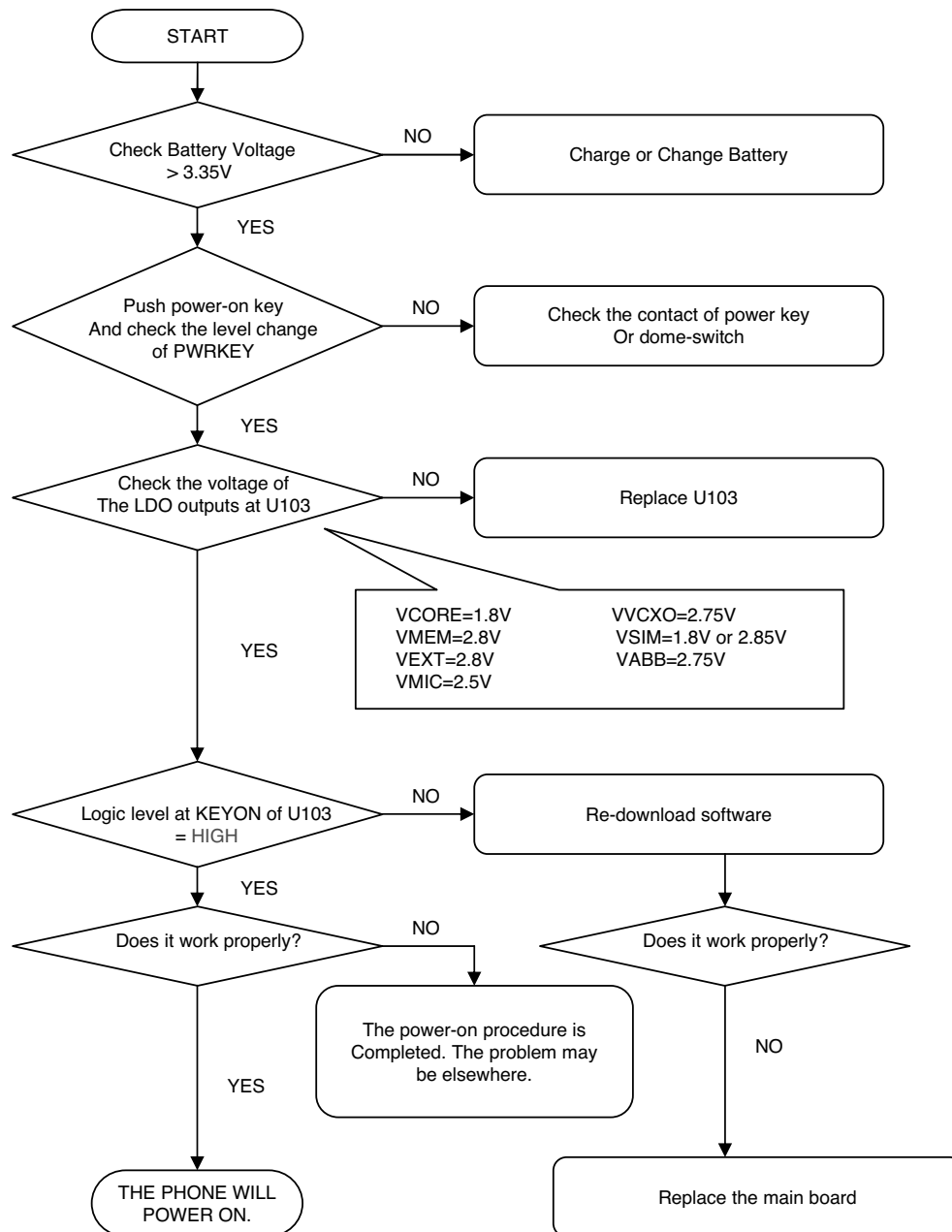


Figure 11

#### CIRCUIT



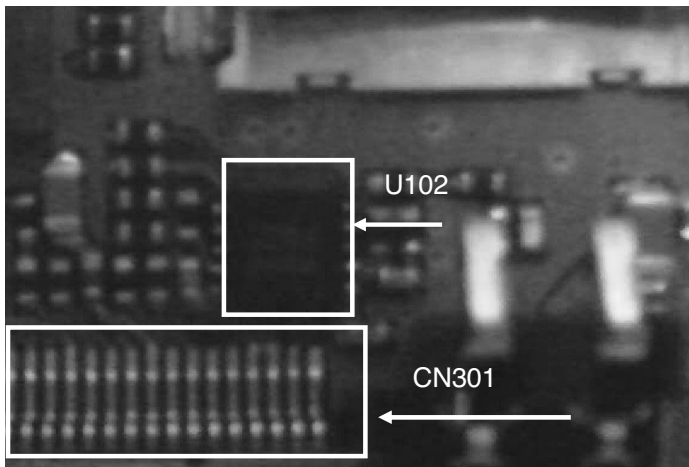
### Checking Flow



## 4. TROUBLE SHOOTING

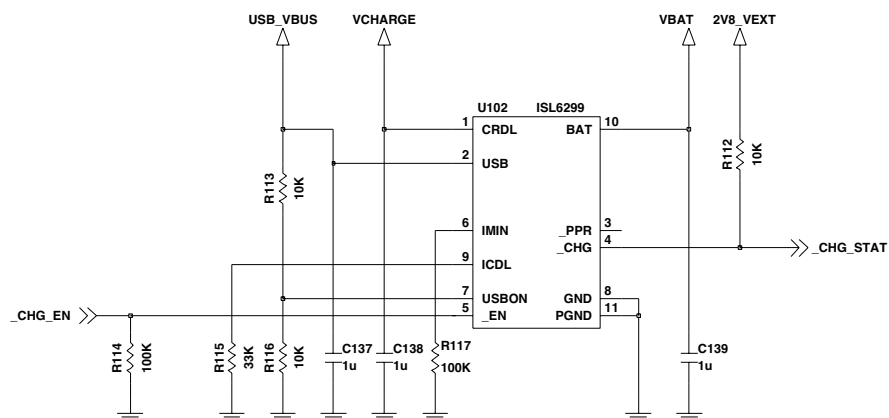
### 4.5 Charging Trouble

#### TEST POINT

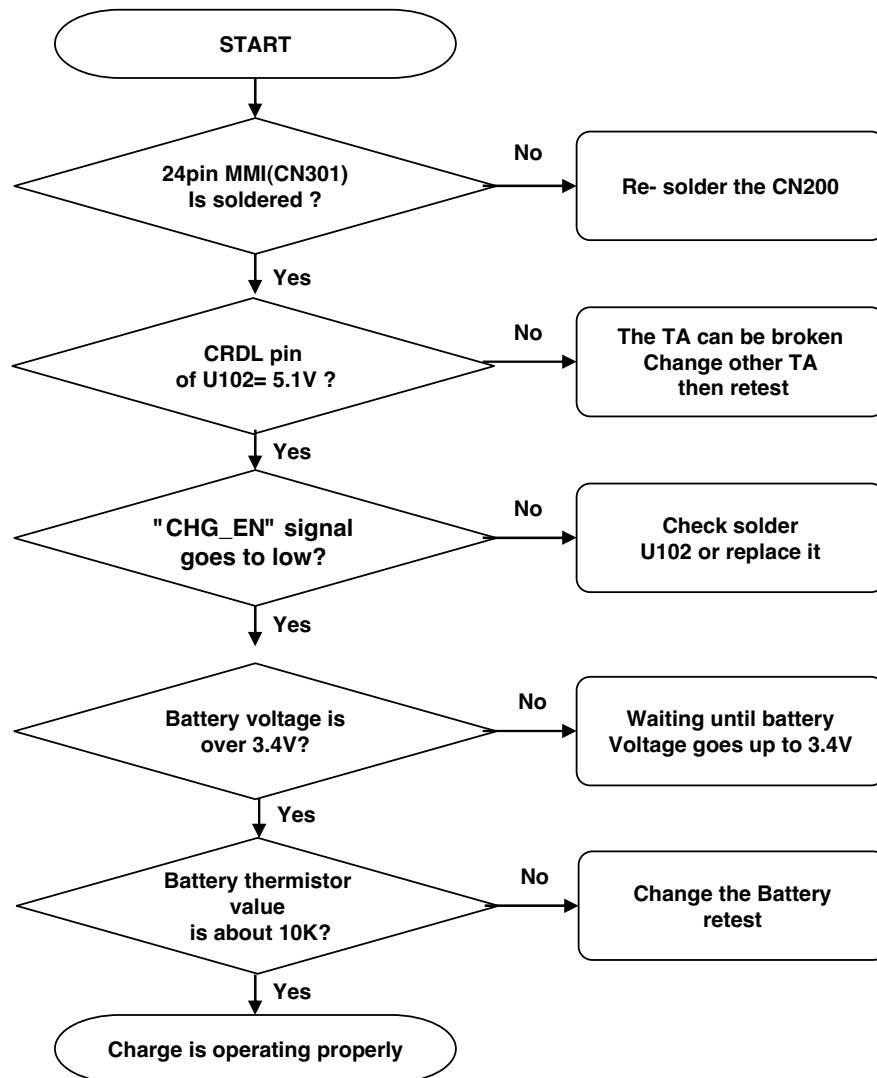


#### CIRCUIT

#### CHARGE(TA+USB)



### Checking Flow



## 4. TROUBLE SHOOTING

### 4.6 Vibrator Trouble

#### TEST POINT

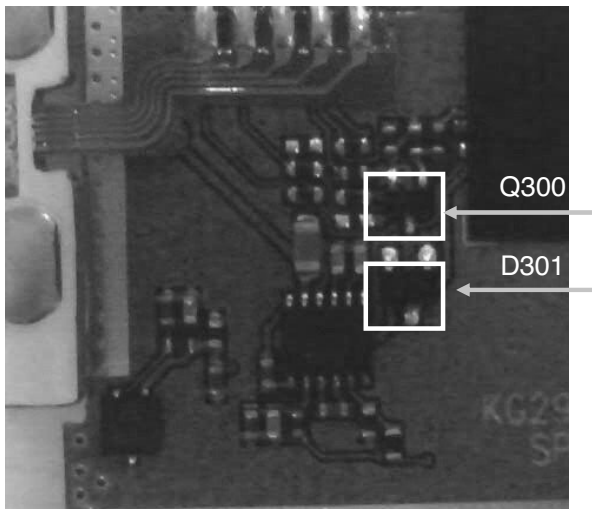
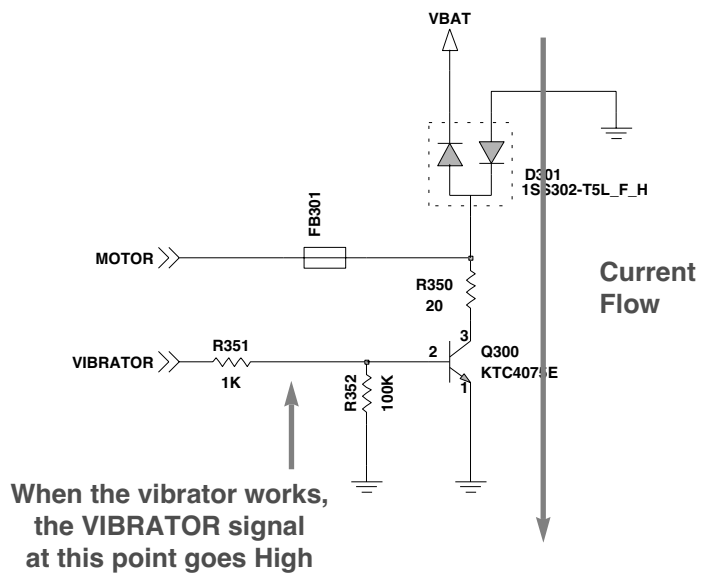


Figure 13

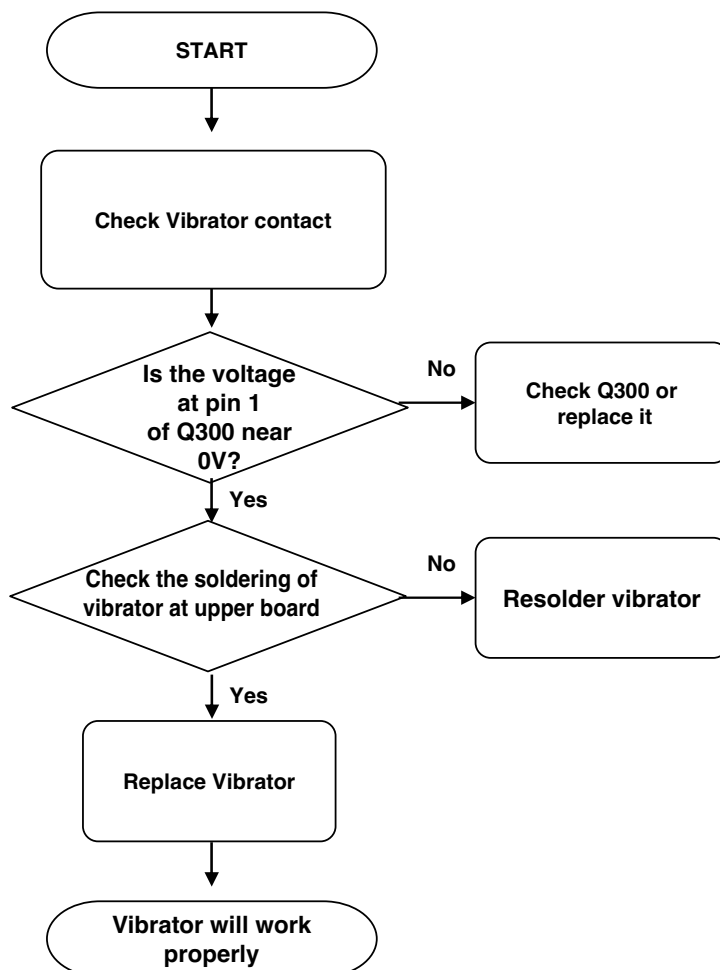
#### CIRCUIT

### VIBRATOR



### Checking Flow

SETTING : Enter the engineering mode, and set vibrator on at vibration of BB test menu



## 4. TROUBLE SHOOTING

---

### 4.7 LCD Trouble

#### TEST POINT

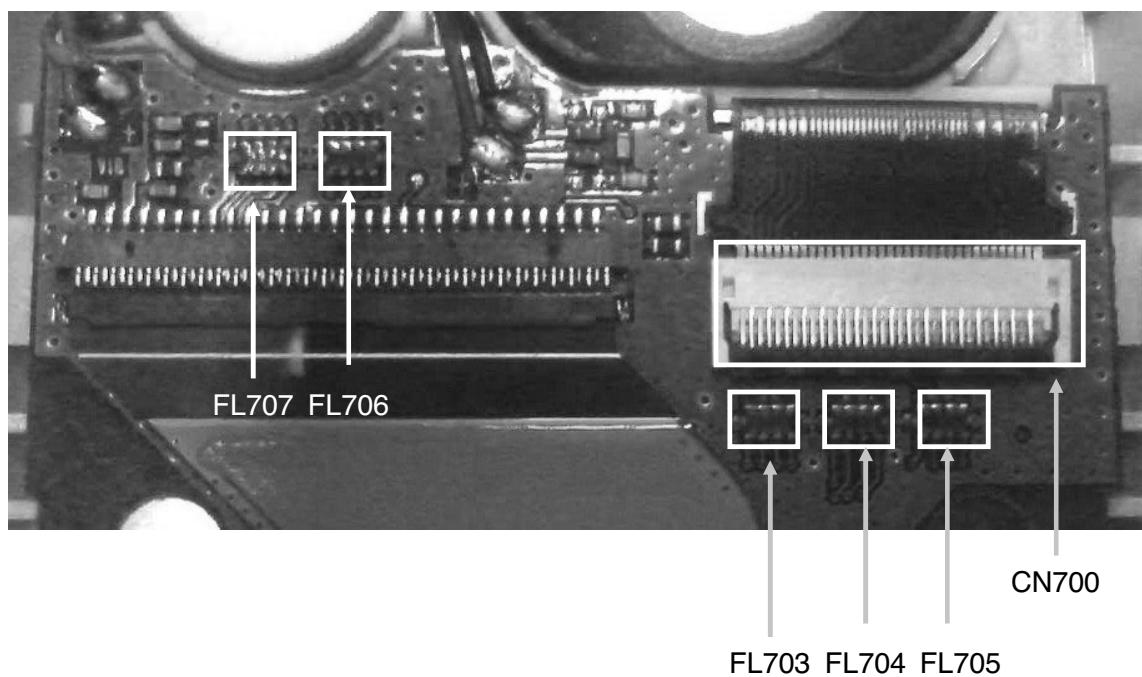
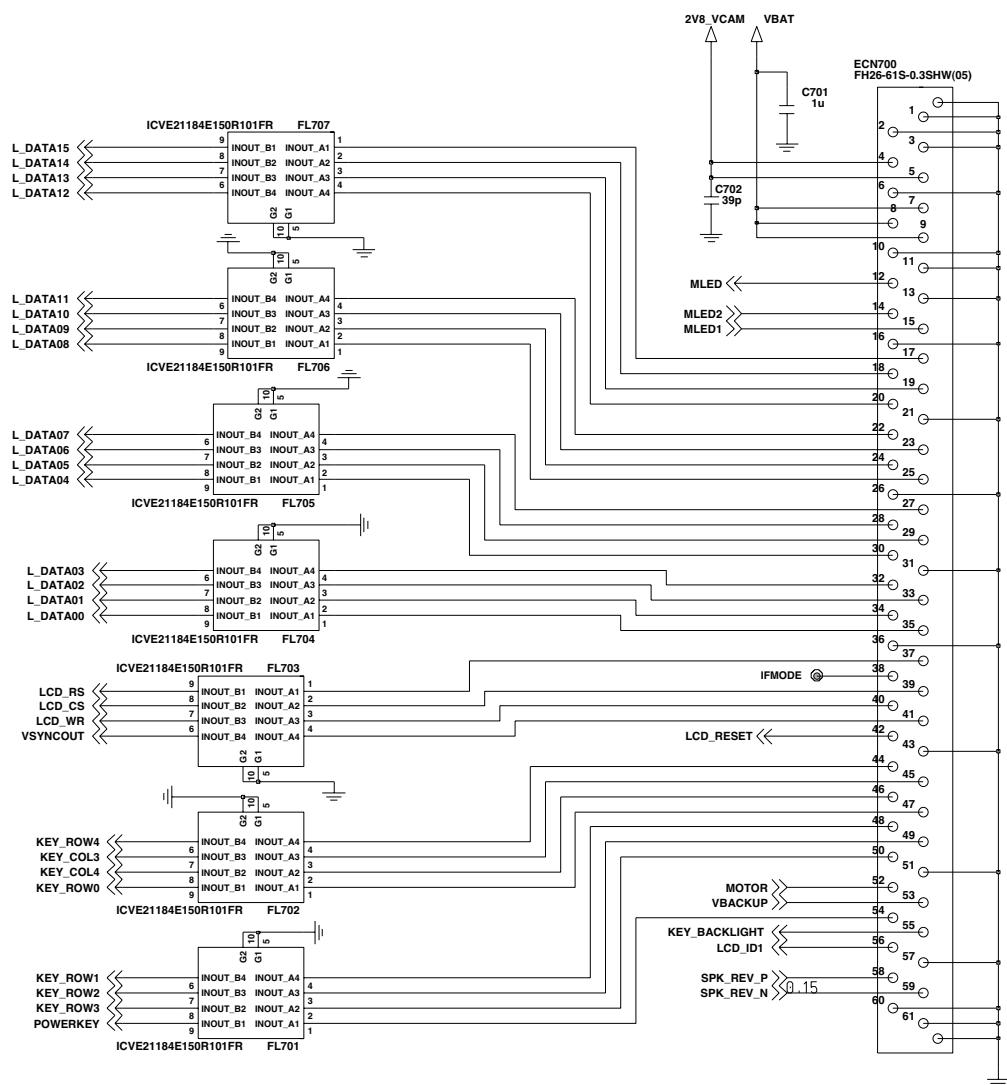


Figure 15

## LCD Trouble

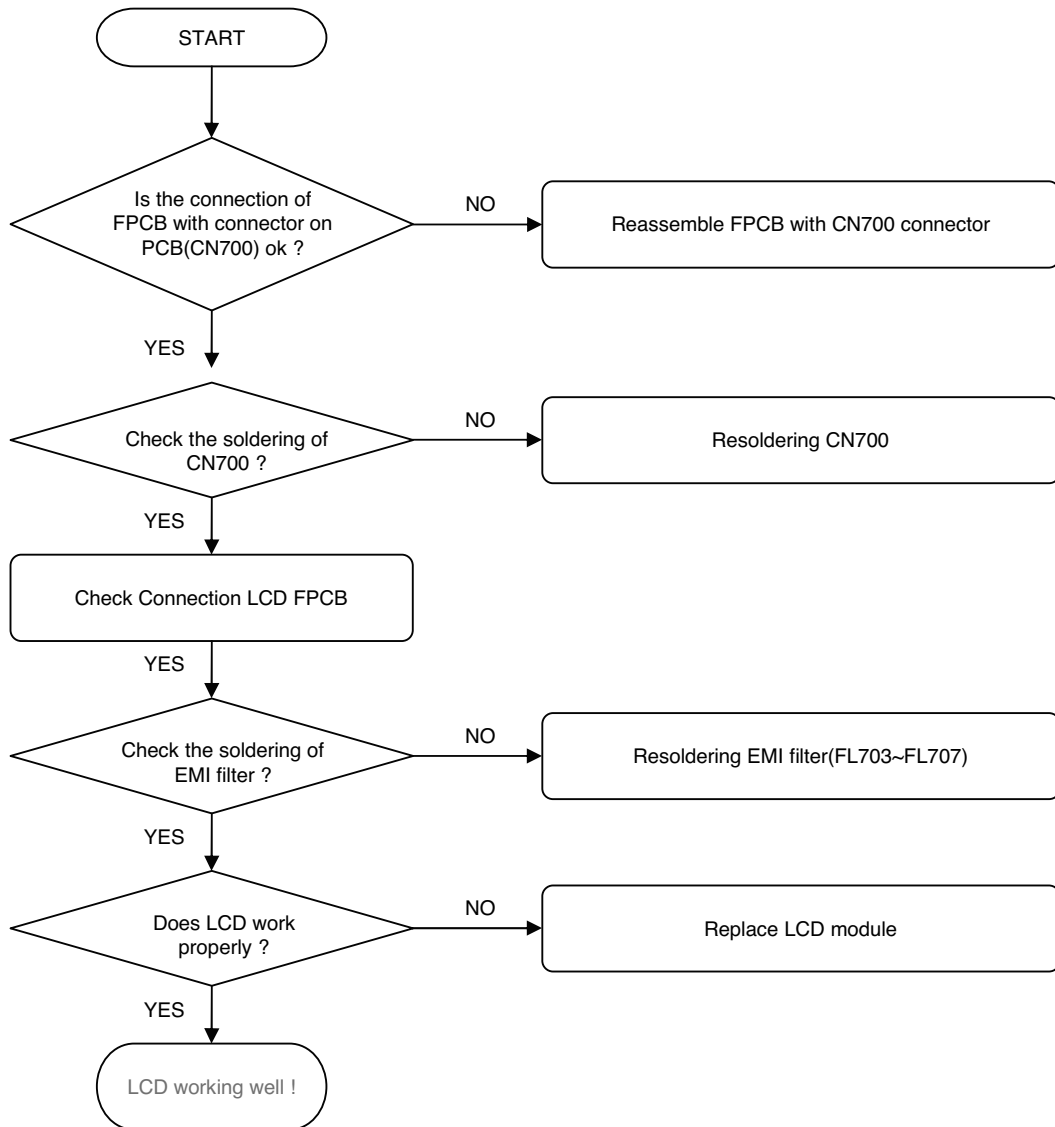
### CIRCUIT

#### I/F CONNECTOR



## 4. TROUBLE SHOOTING

### CHECKING FLOW



### 4.8 Camera Trouble

#### TEST POINT

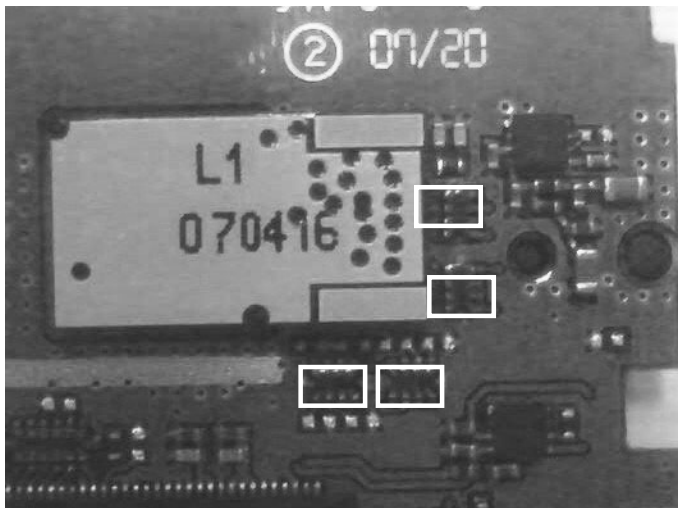


Figure 16

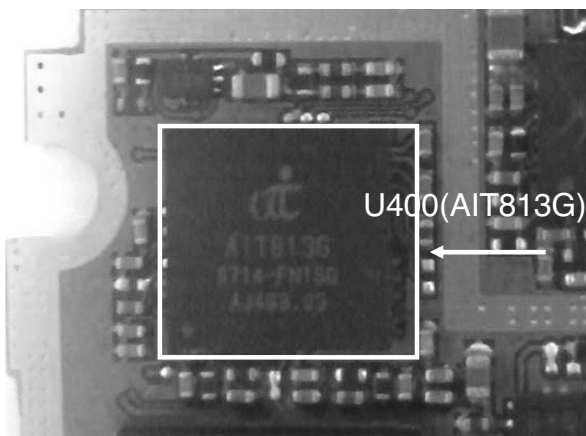
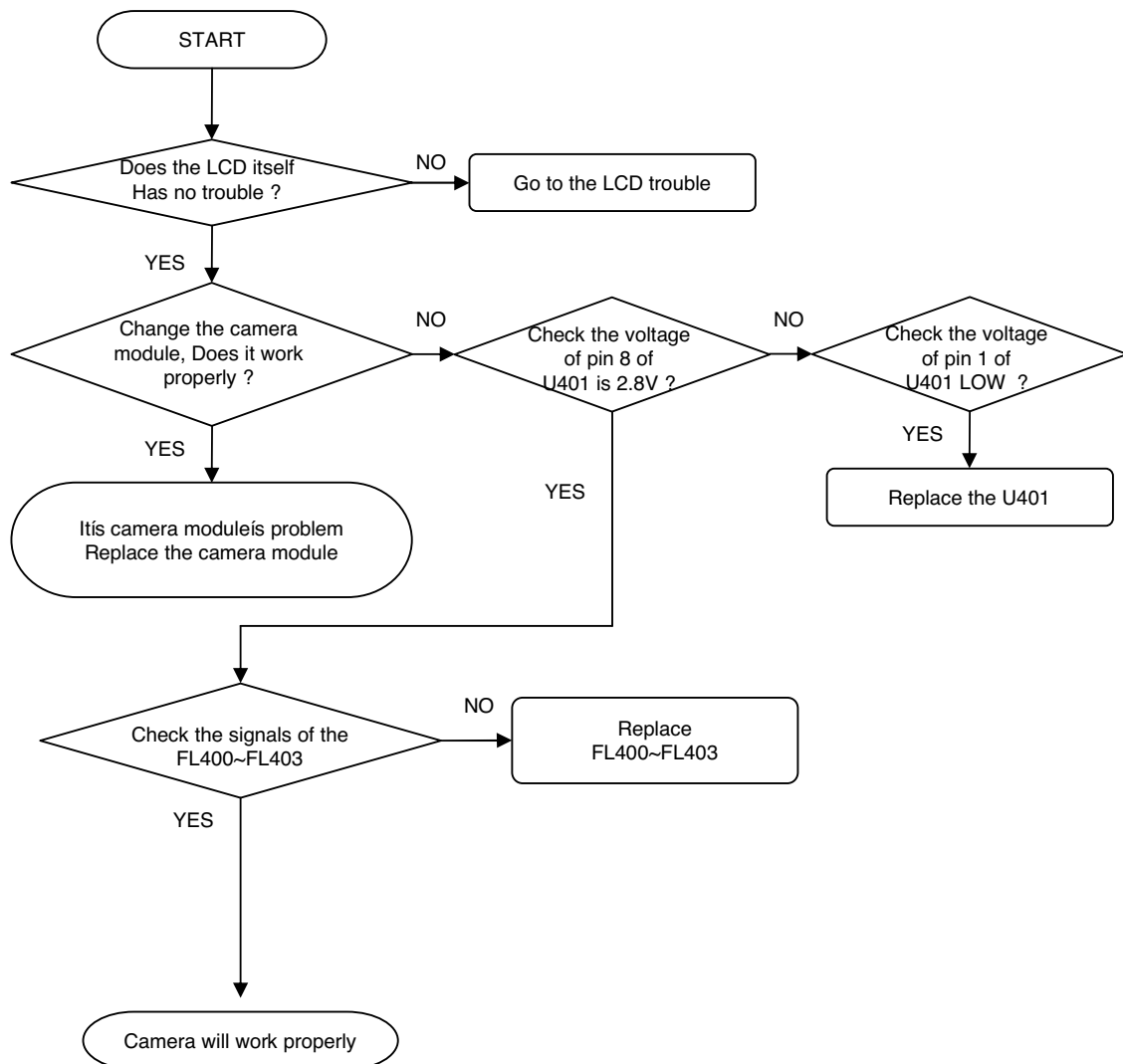


Figure 17

## CIRCUIT

[illegible]

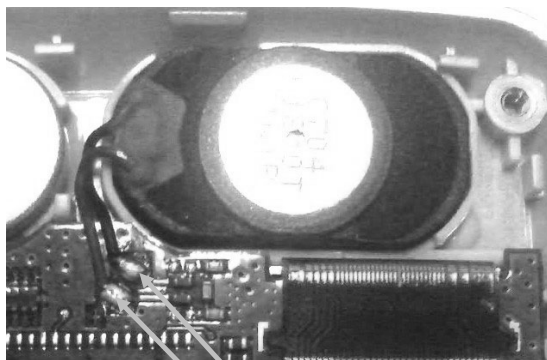
### CHECKING FLOW



## 4. TROUBLE SHOOTING

### 4.9 Speaker & Receiver Trouble

#### TEST POINT



Check the contact soldering

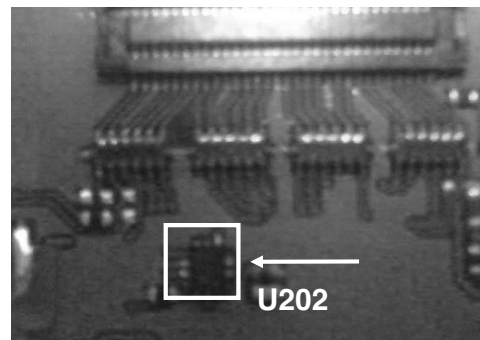
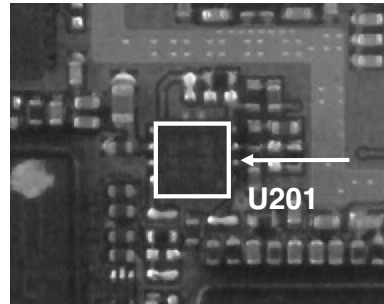
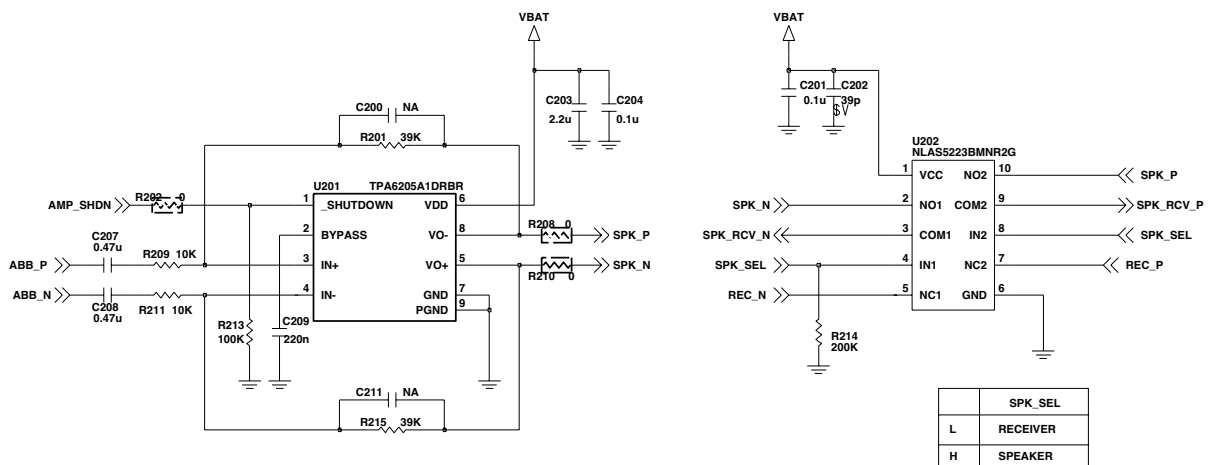


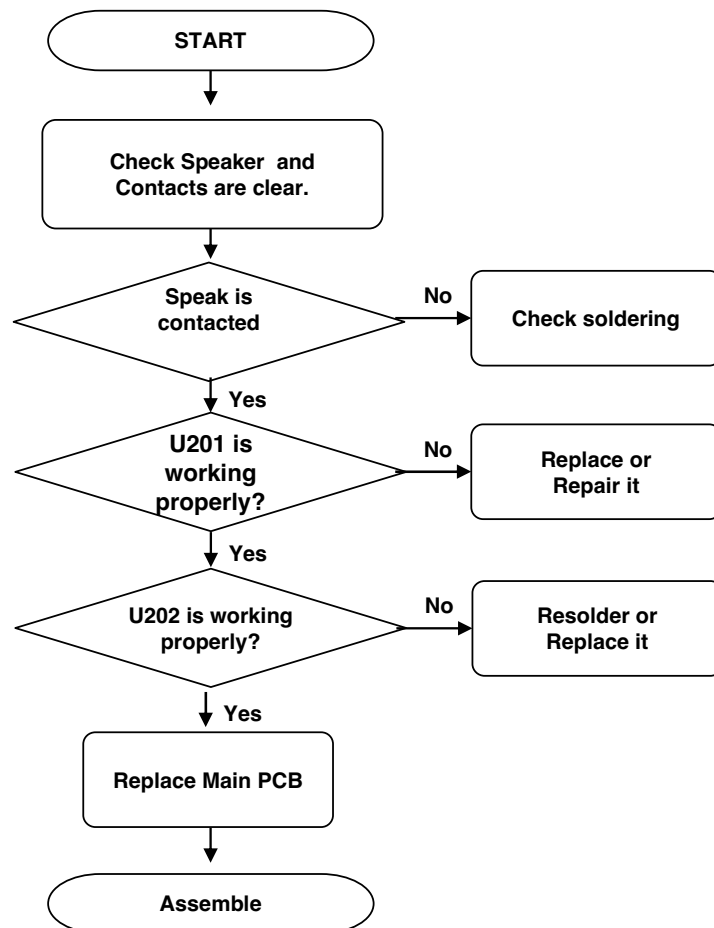
Figure 18

#### CIRCUIT

#### ACOUSTIC & MIDI



### CHECKING FLOW



## 4. TROUBLE SHOOTING

### 4.10 SIM Card Interface Trouble

#### TEST POINT

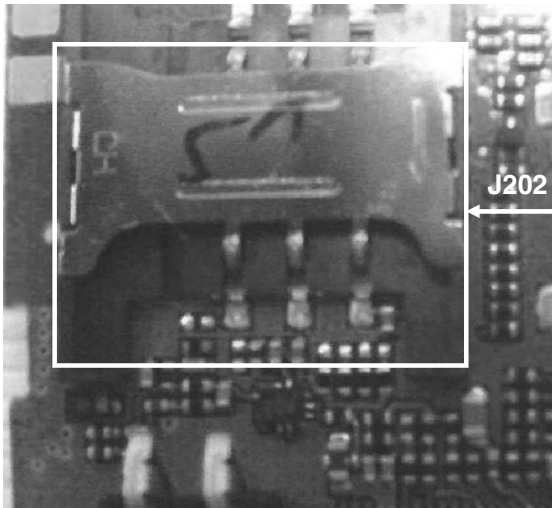
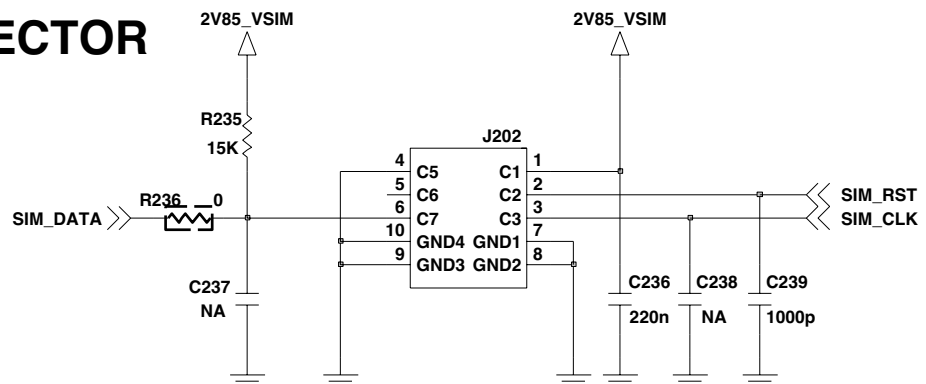


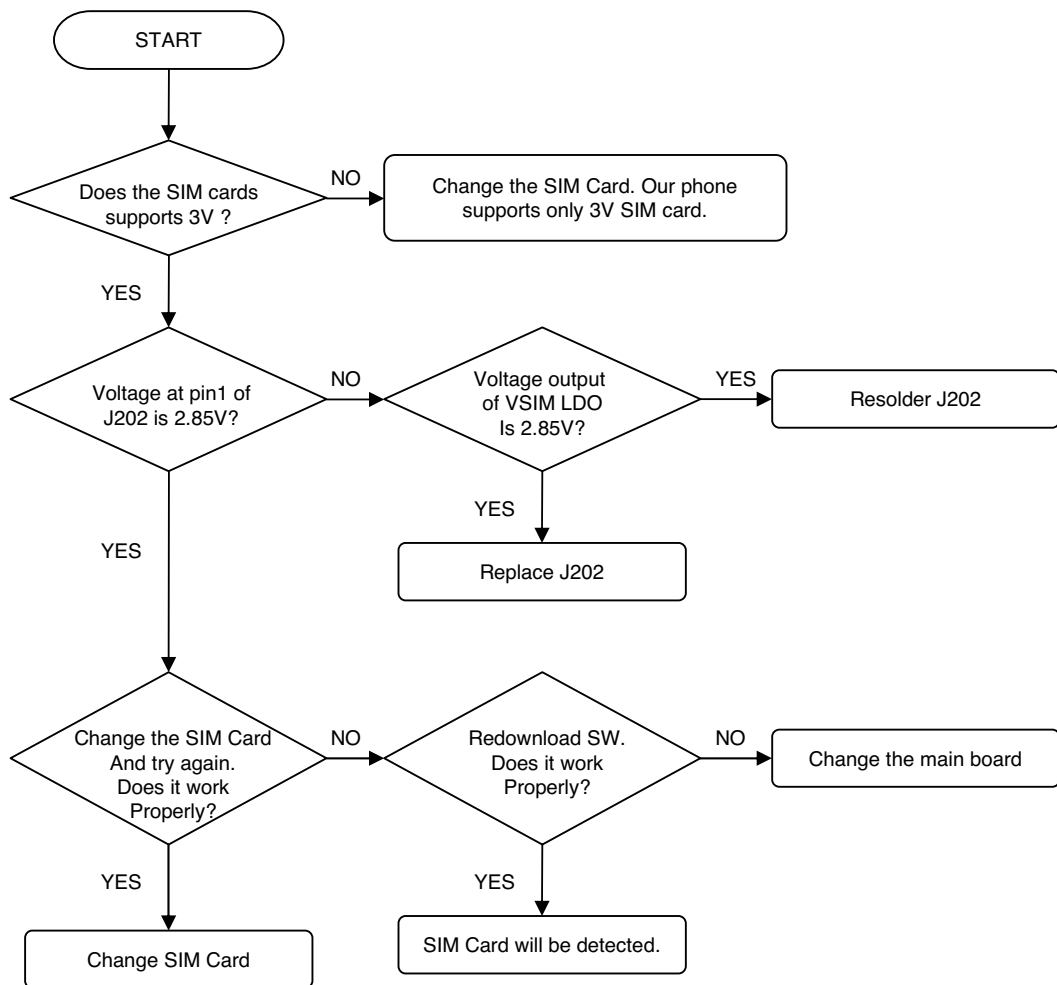
Figure 19

#### CIRCUIT

### SIM CONNECTOR

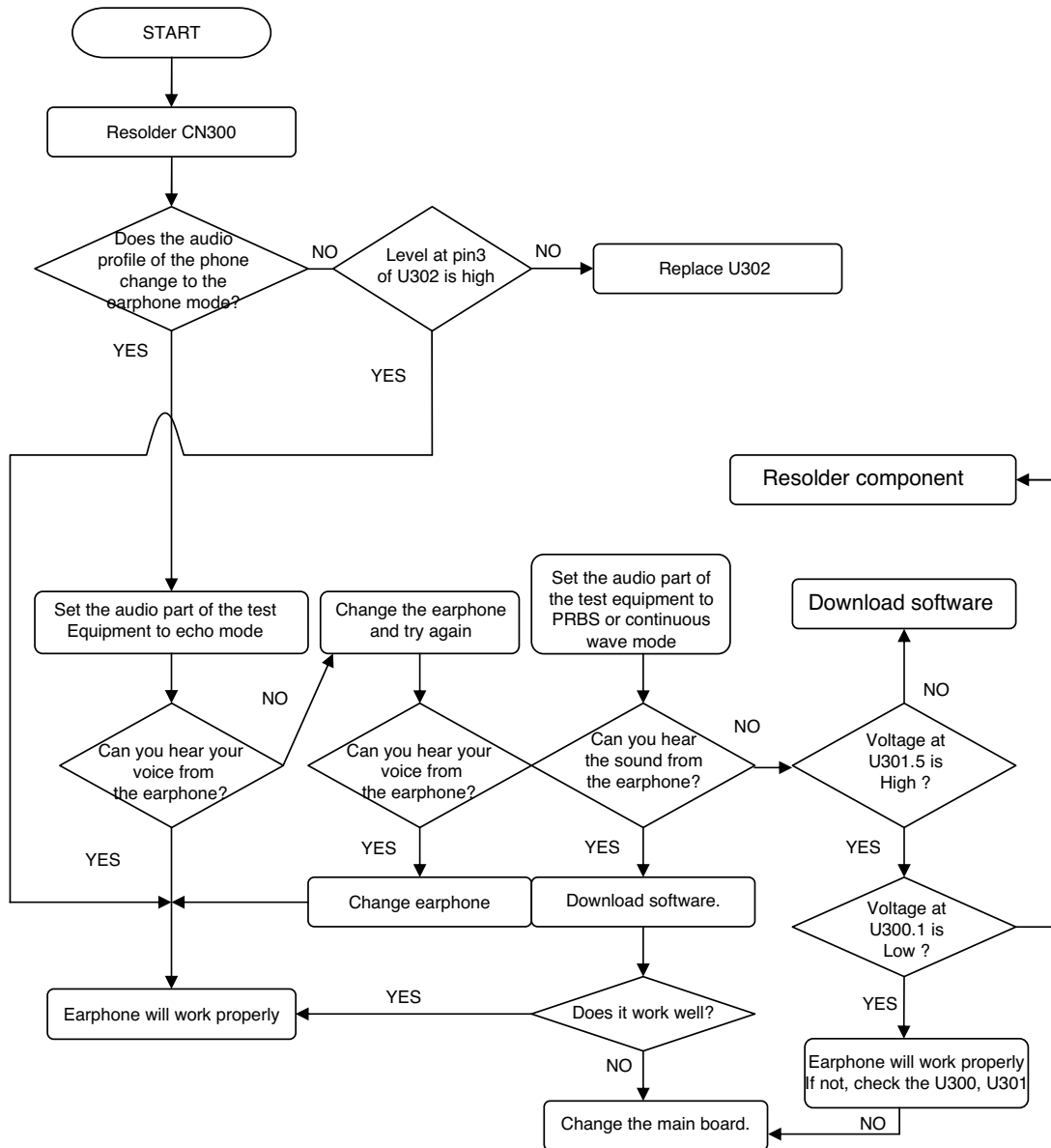


### CHECKING FLOW





### CHECKING FLOW

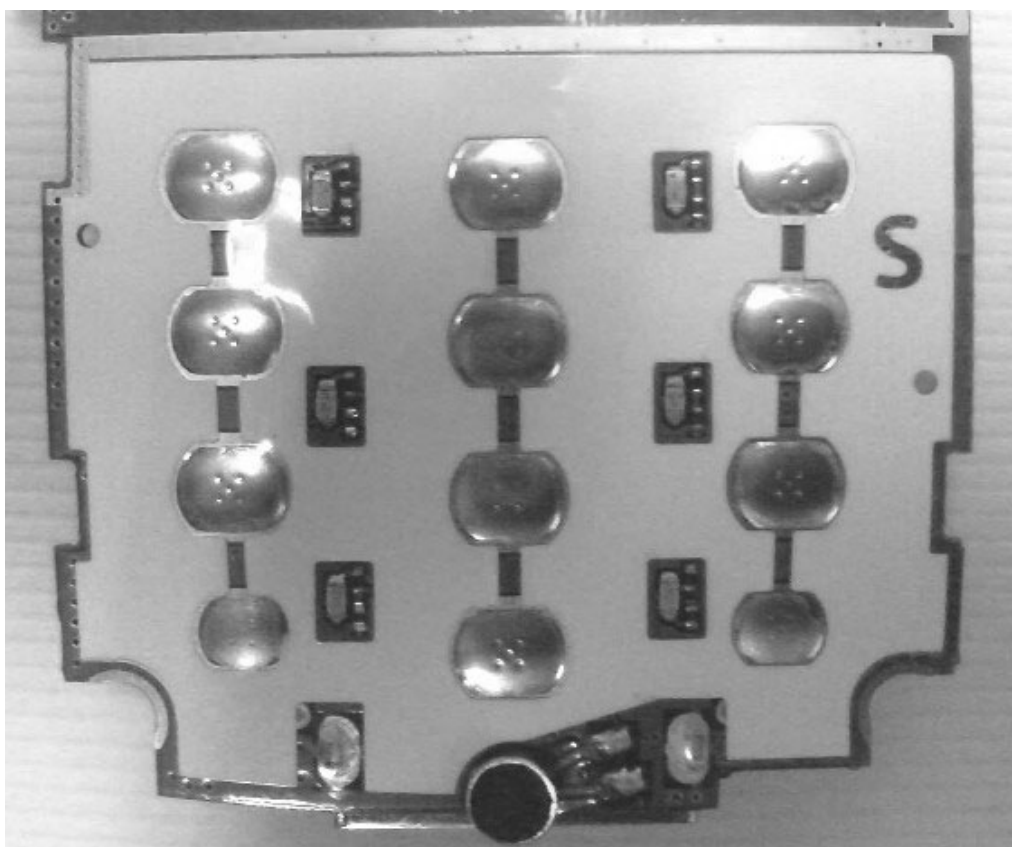


## 4. TROUBLE SHOOTING

---

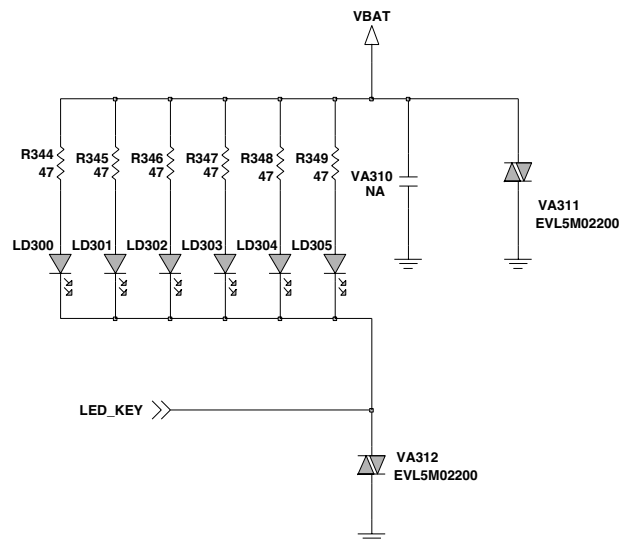
### 4.12 KEY backlight Trouble

#### TEST POINT

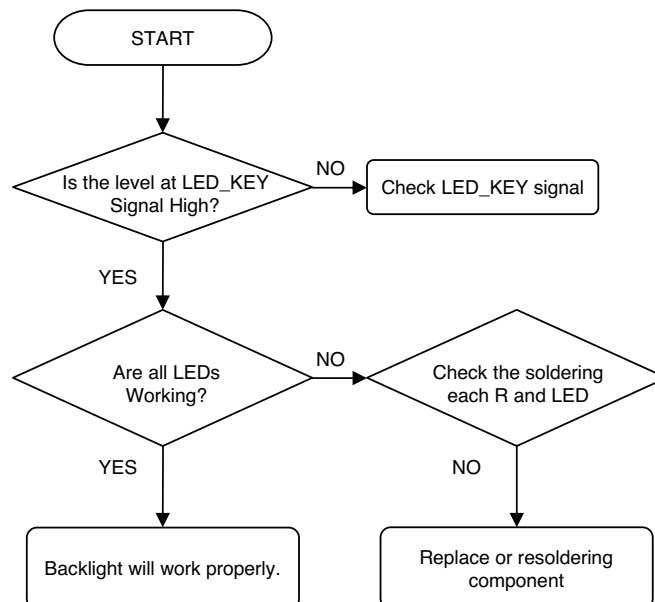


### CIRCUIT

### KEY BACKLIGHT



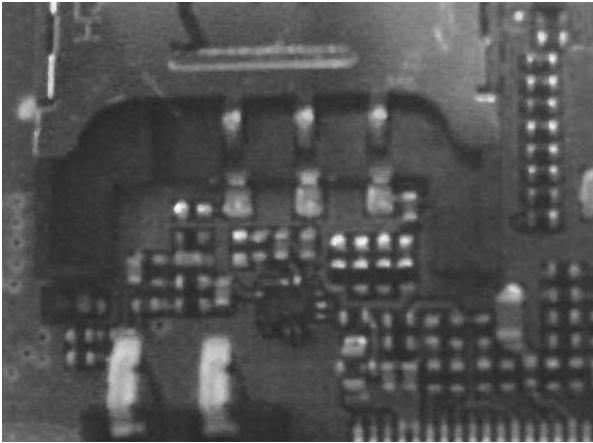
### CHECKING FLOW



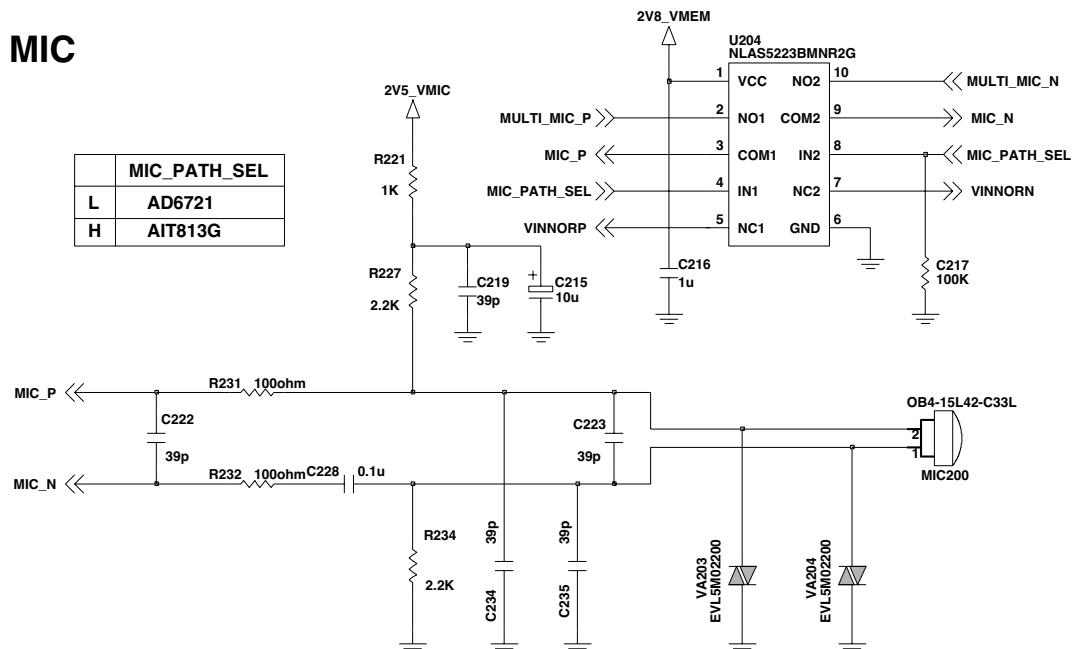
## 4. TROUBLE SHOOTING

### 4.13 Microphone Trouble

#### TEST POINT

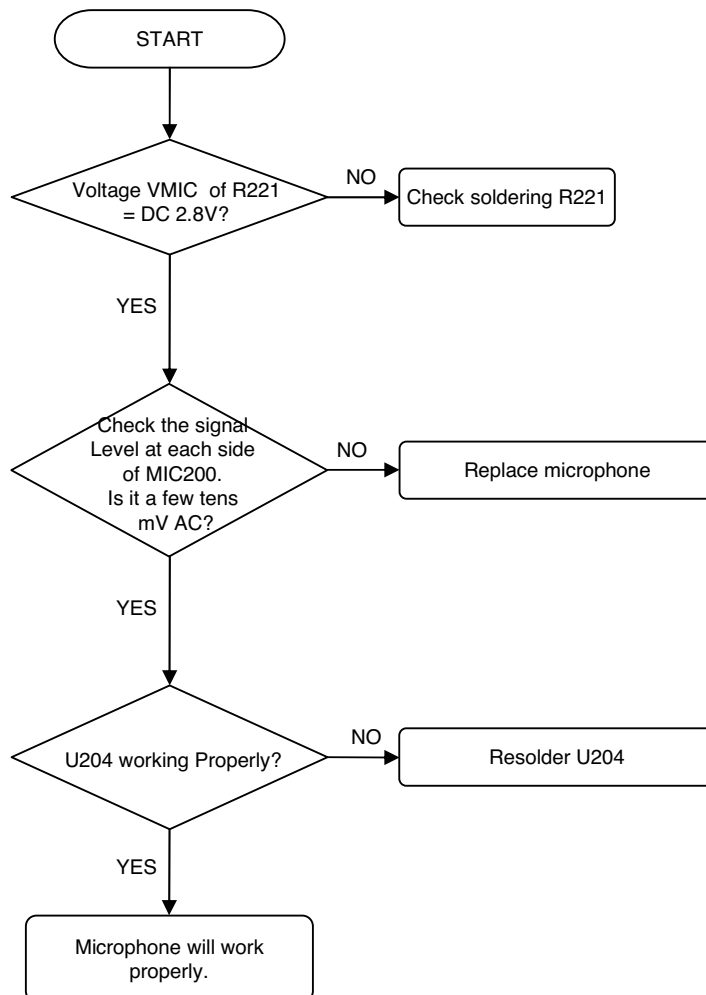


#### CIRCUIT



### CHECKING FLOW

SETTING : After initialize Agilent 8960, Test EGSM, DCS mode



## 4. TROUBLE SHOOTING

### 4.14 RTC Trouble

#### TEST POINT

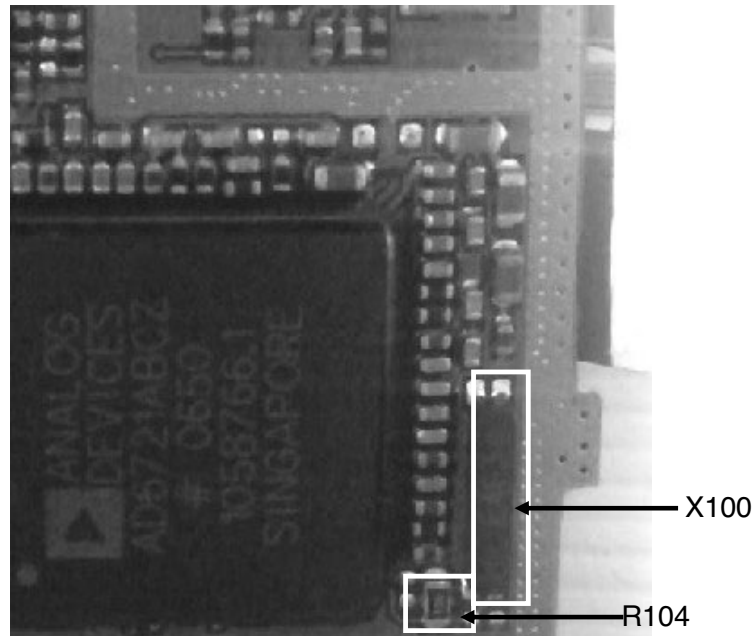
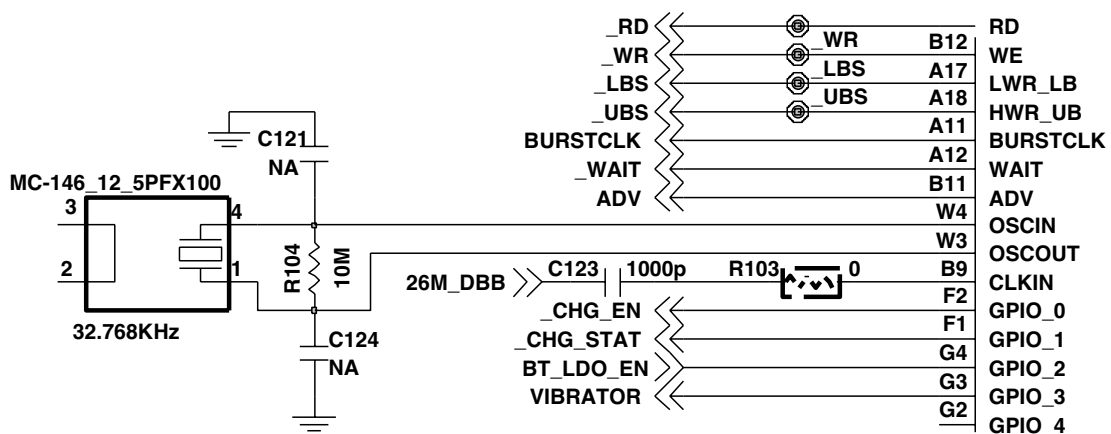
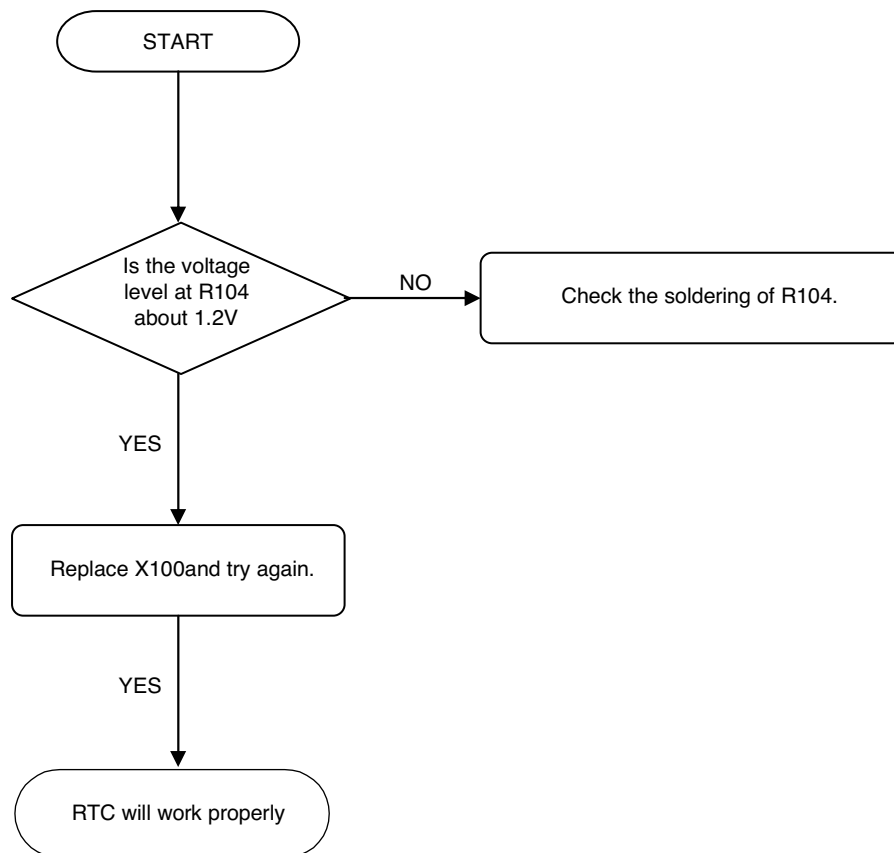


Figure 24

#### CIRCUIT



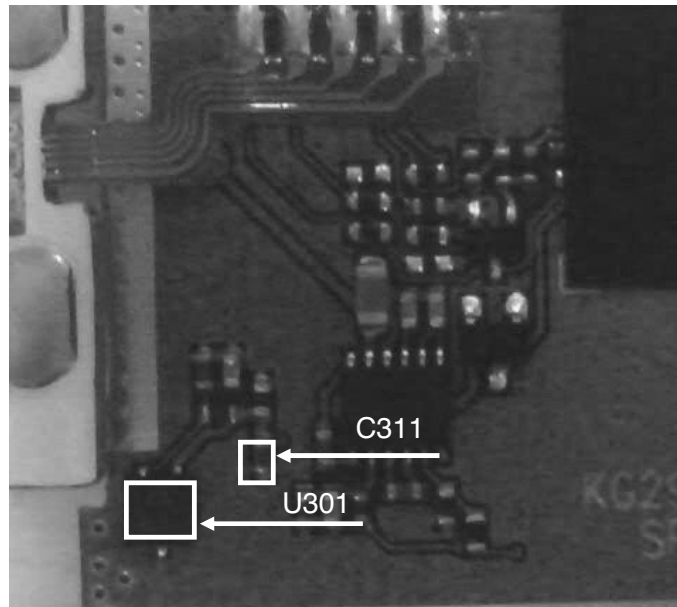
### CHECKING FLOW



## 4. TROUBLE SHOOTING

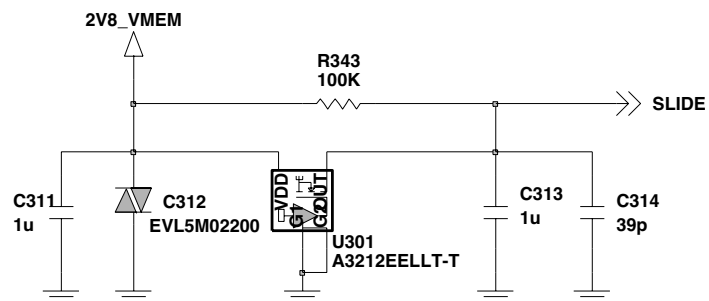
### 4.15 Slide on/off Trouble

#### TEST POINT

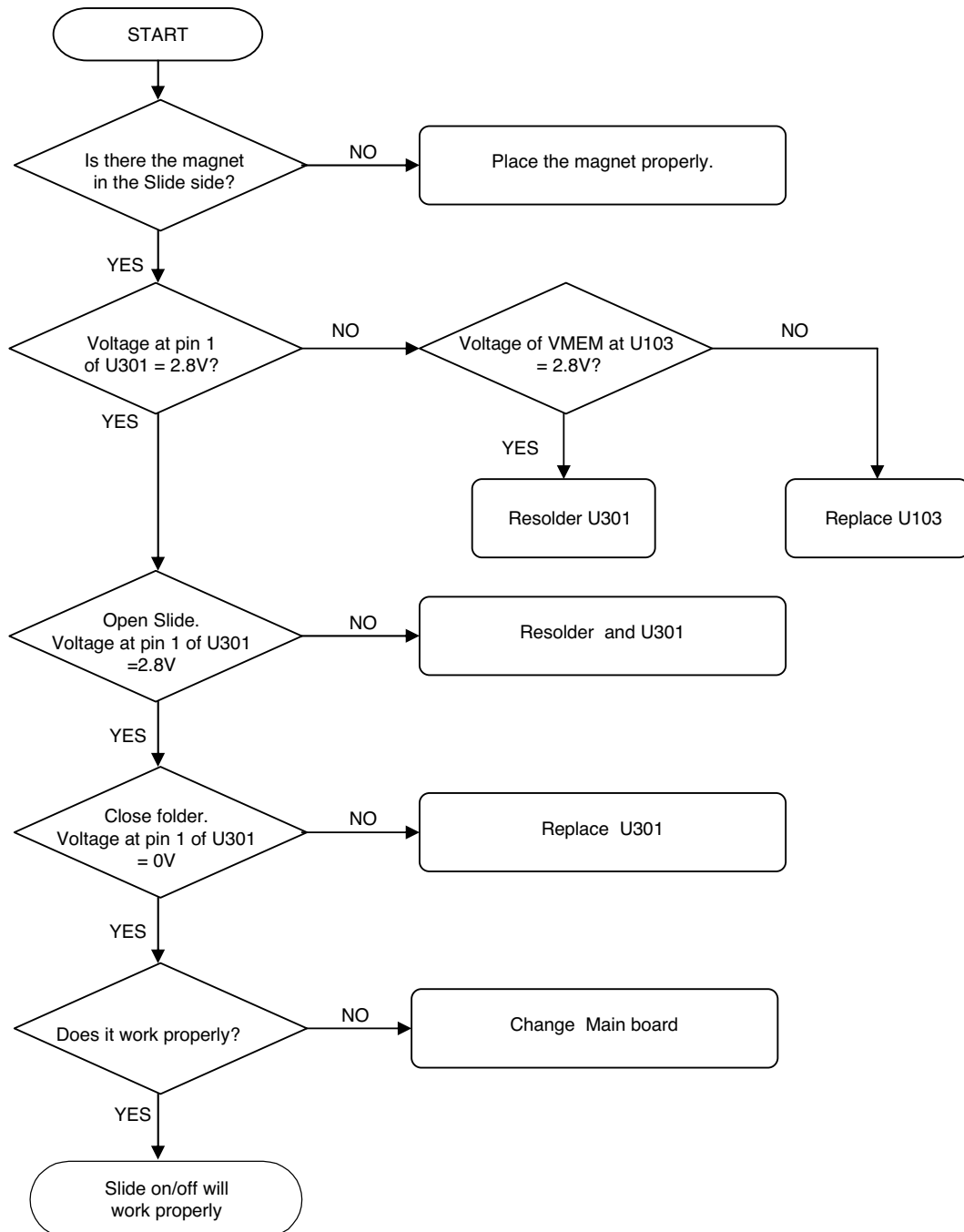


#### CIRCUIT

### SLIDE SW



### CHECKING FLOW



## 5. DOWNLOAD

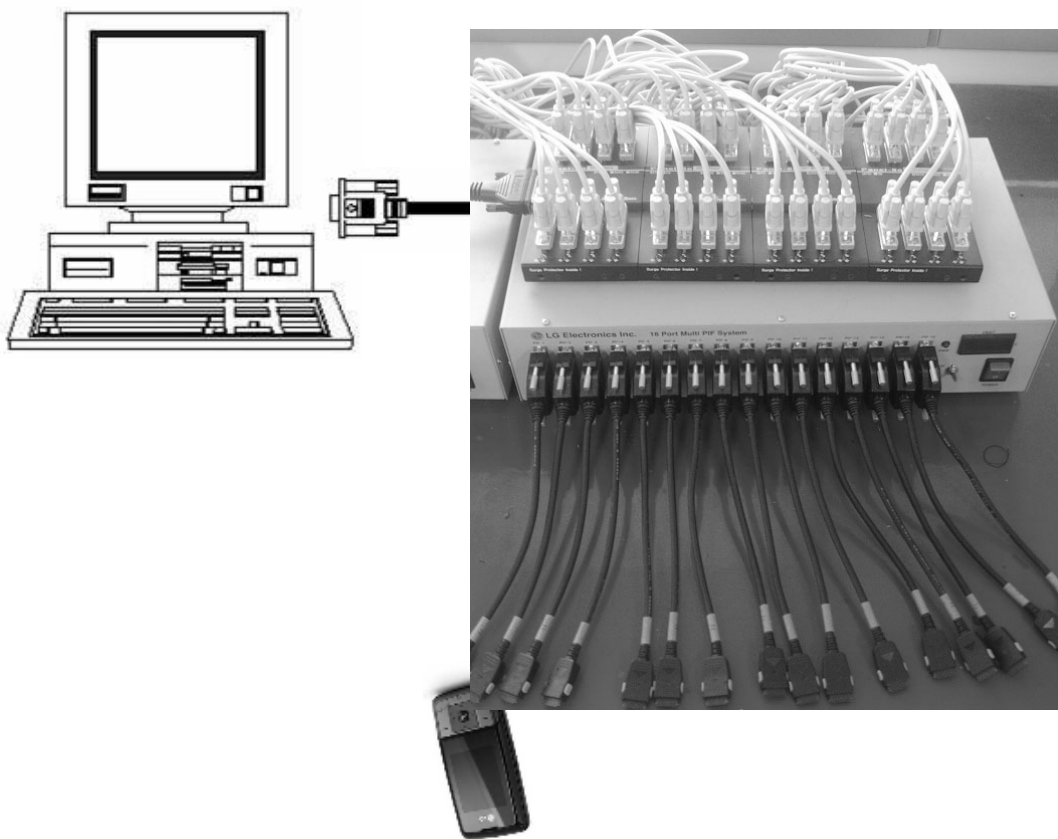
---

## 5. DOWNLOAD

### 5.1 Download

#### A. Download Setup

Figure 5-1 describes Download setup



**Figure 5-1. Download Setup**

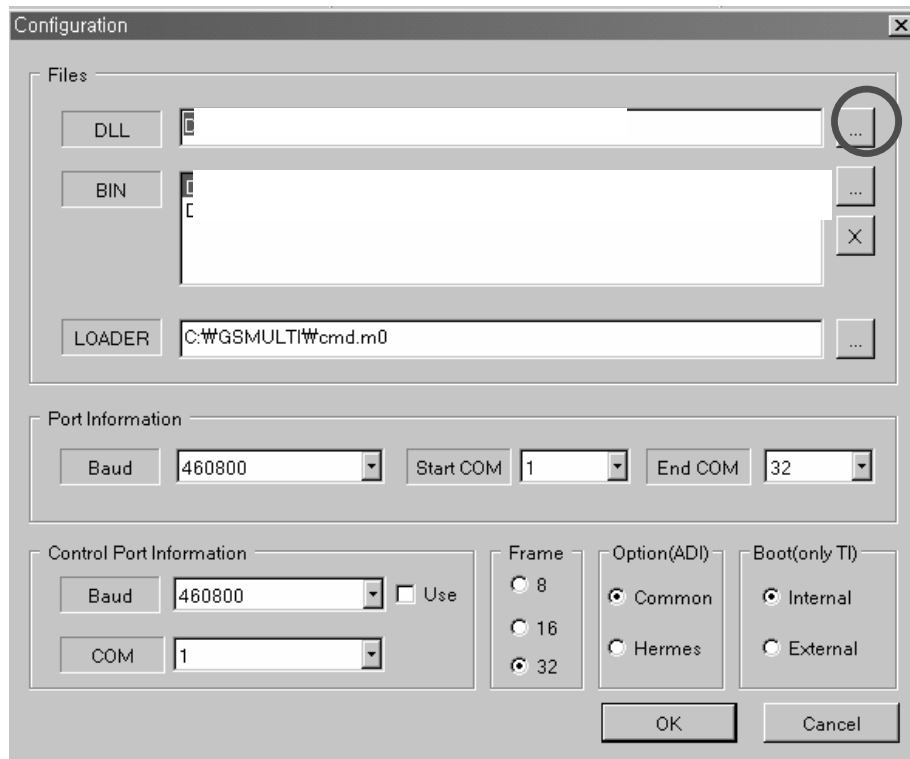
### B. Multi Download Procedure

1. Run GSM Multi Download program and select Setting

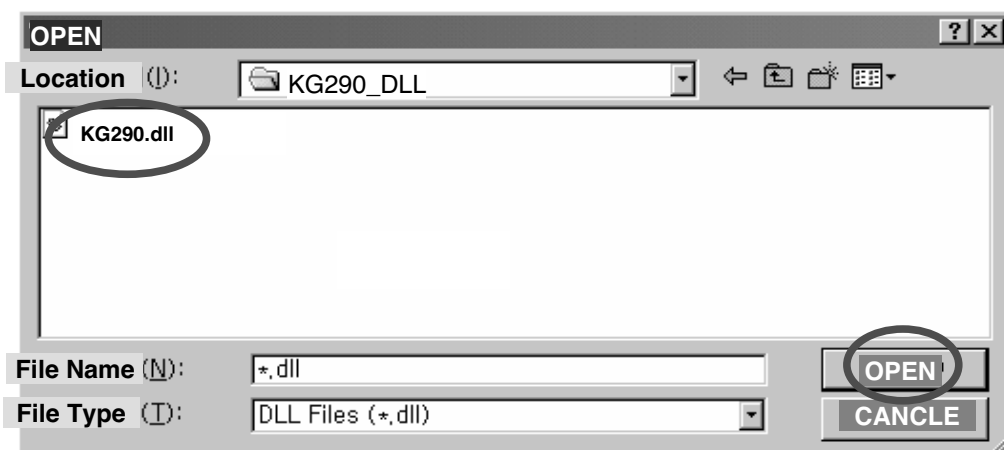


## 5. DOWNLOAD


2. Select Configuration from the menu and you may see this window

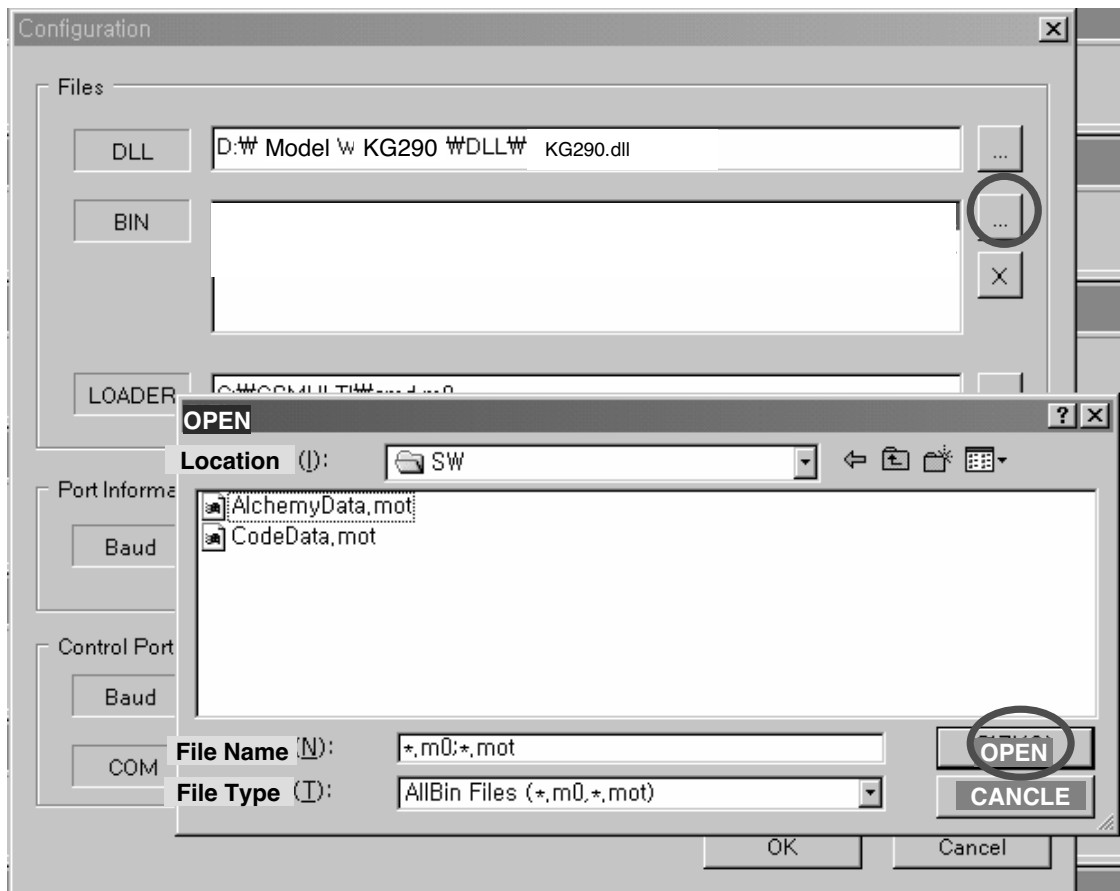


3. Press  key to select DLL file and press Open



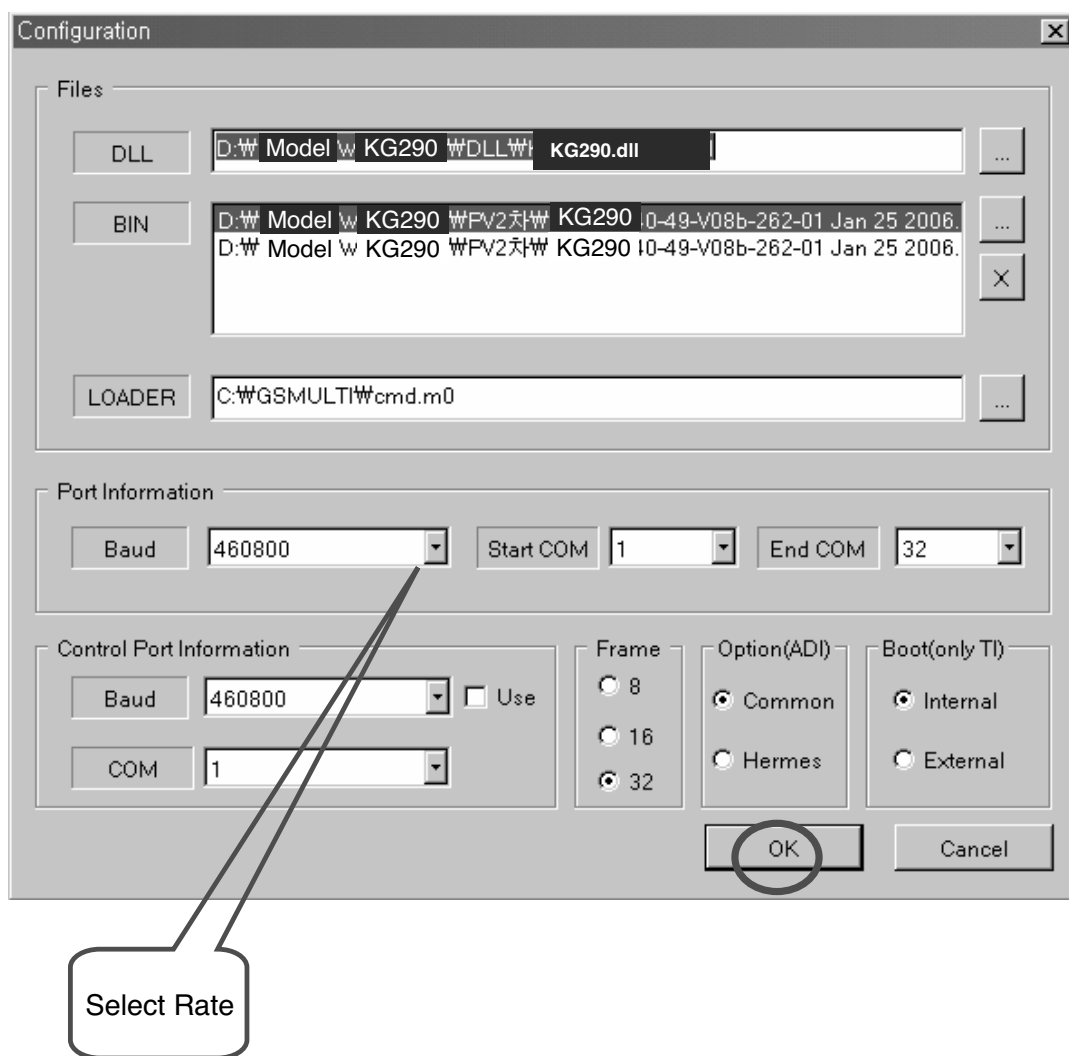
## 5. DOWNLOAD

4. Press  key to select the mot files
5. Select AlchemyData.mot and press open
6. Repeat step 4-5 to select CodeData.mot



## 5. DOWNLOAD

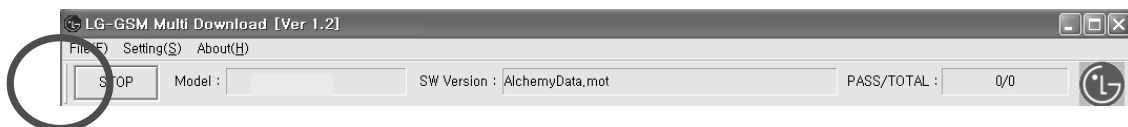
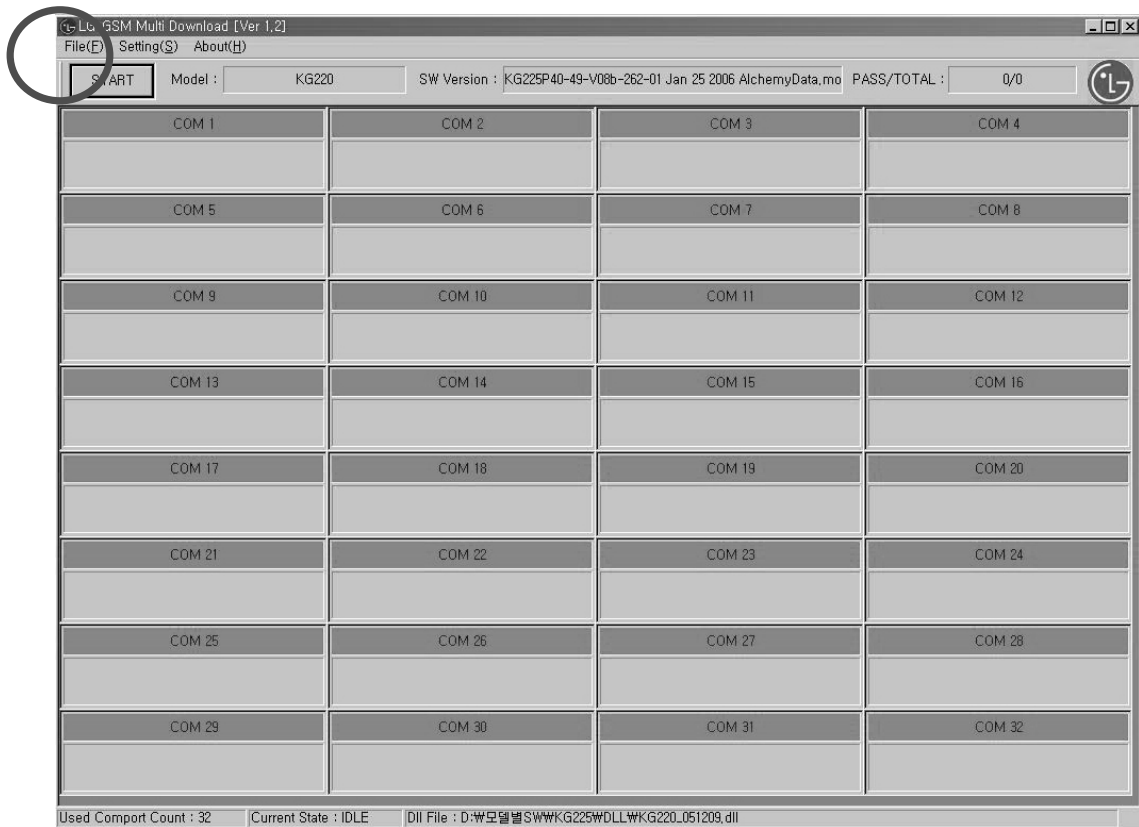
7. Check if the ADI option is set to Hermes
8. Press OK to end Configuration



## 5. DOWNLOAD

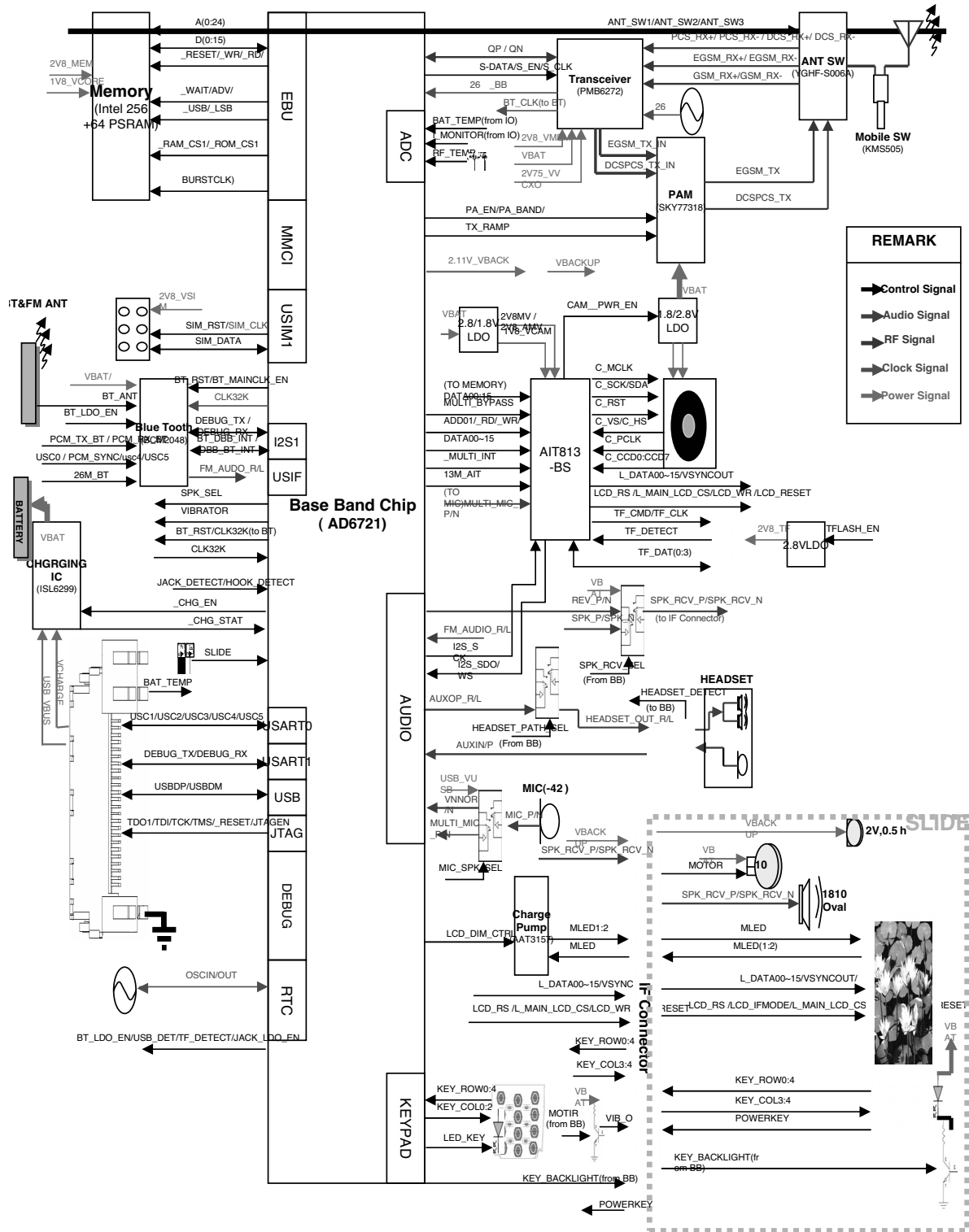
9. Press START to execute download

10. Once downloading is started, press STOP button to keep from re-downloading after downloading is completed.

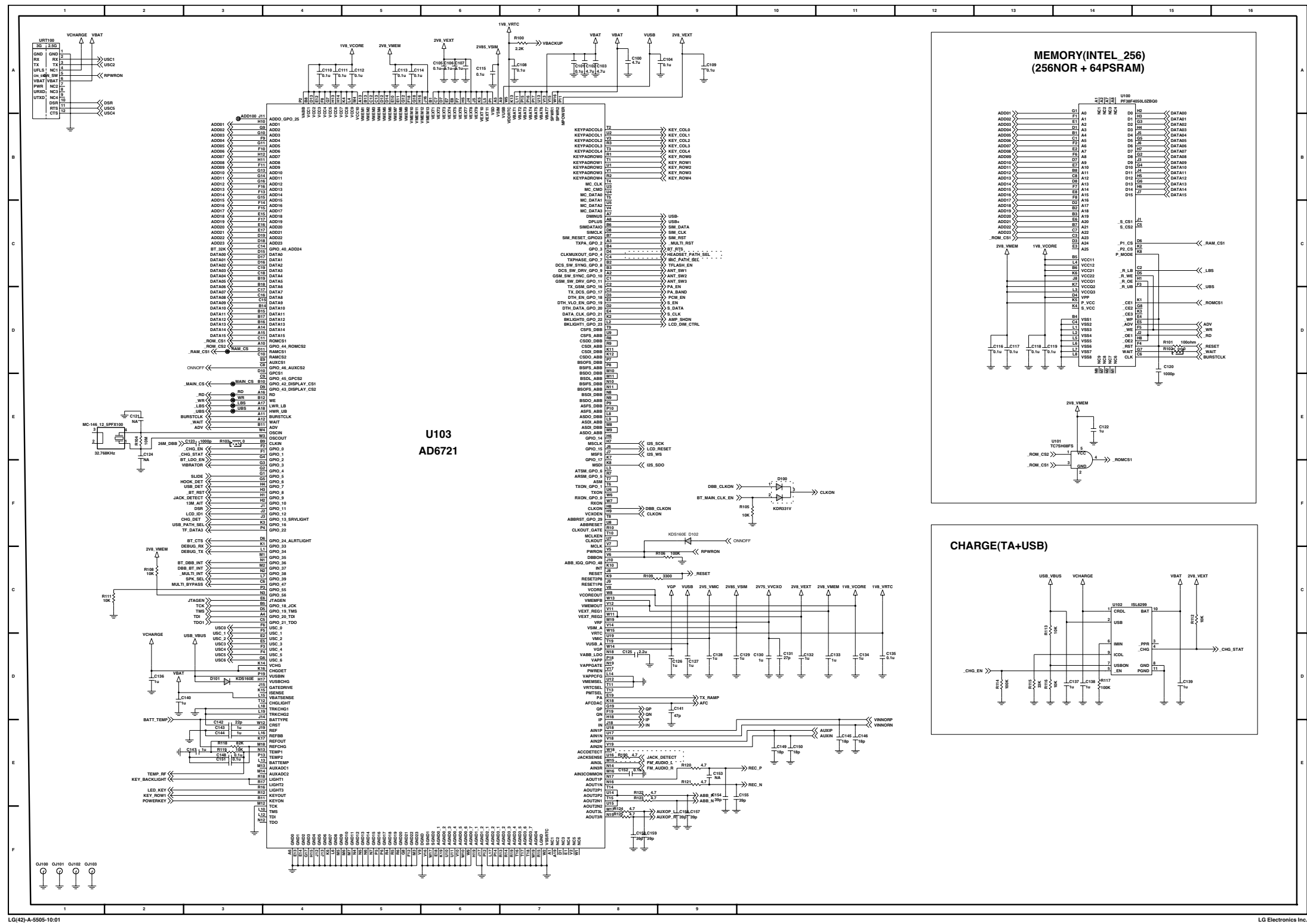


## 6. BLOCK DIAGRAM

## 6. BLOCK DIAGRAM



# 7. CIRCUIT DIAGRAM

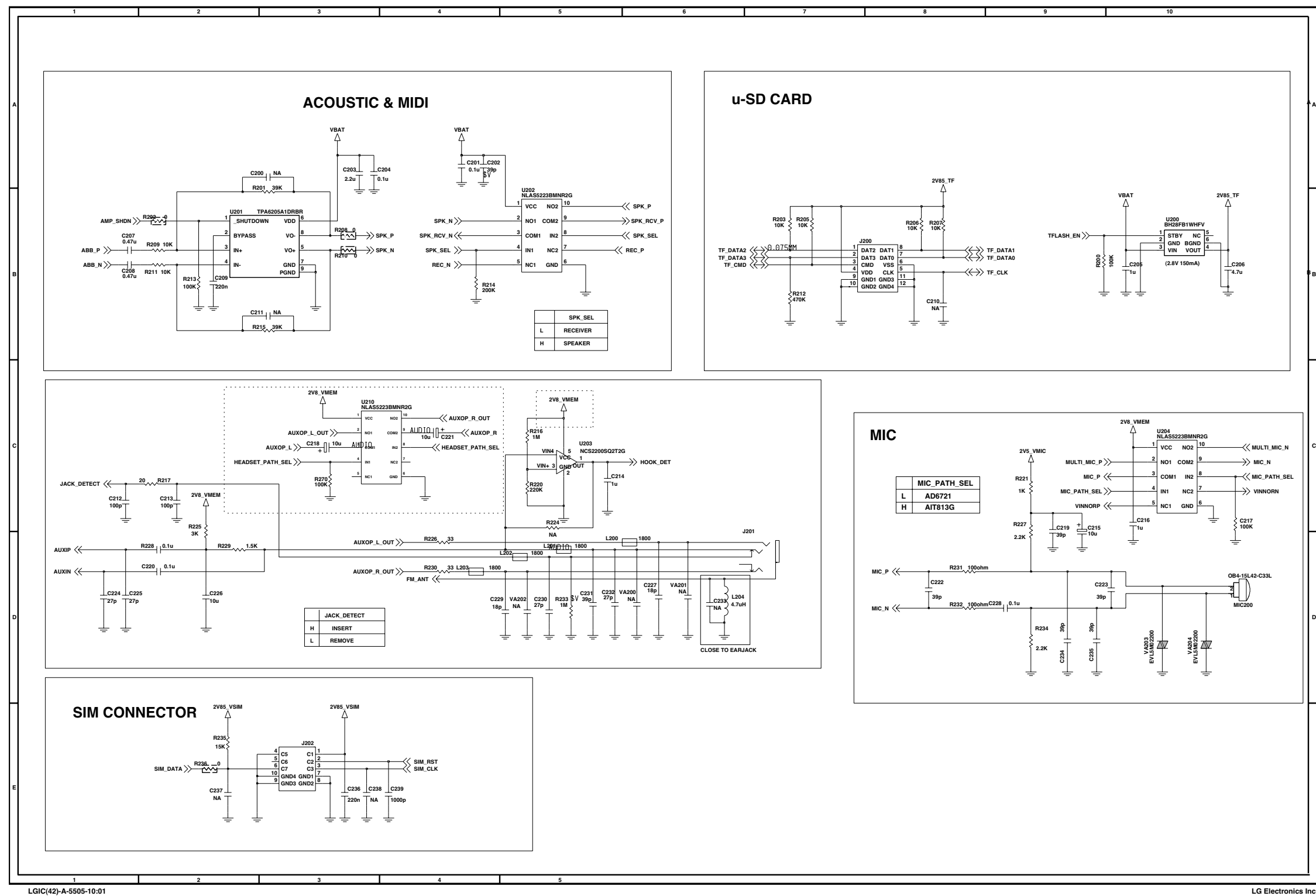


LG(42)-A-5505-10-01

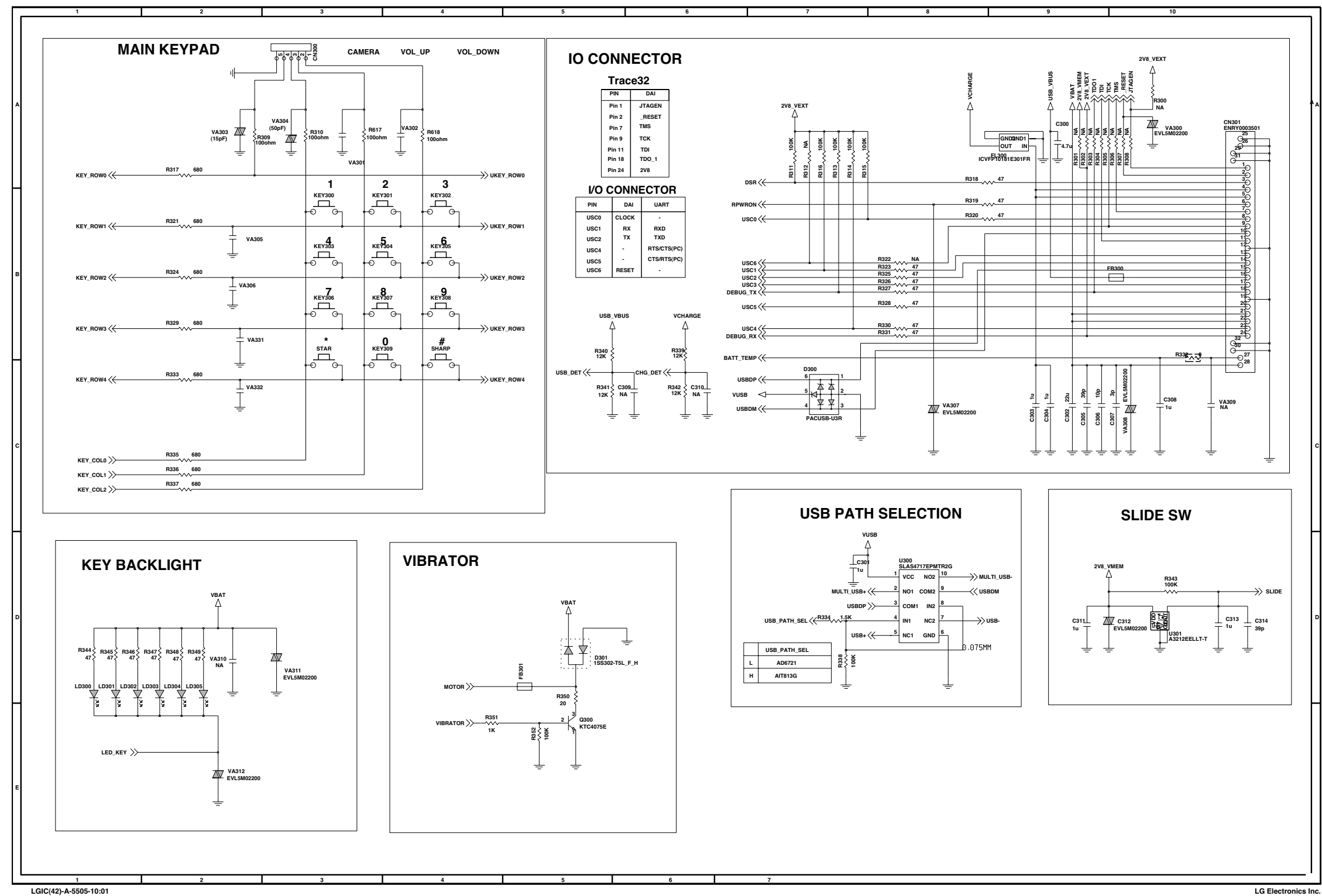
LGMC

LG Electronics Inc.

## 7. CIRCUIT DIAGRAM



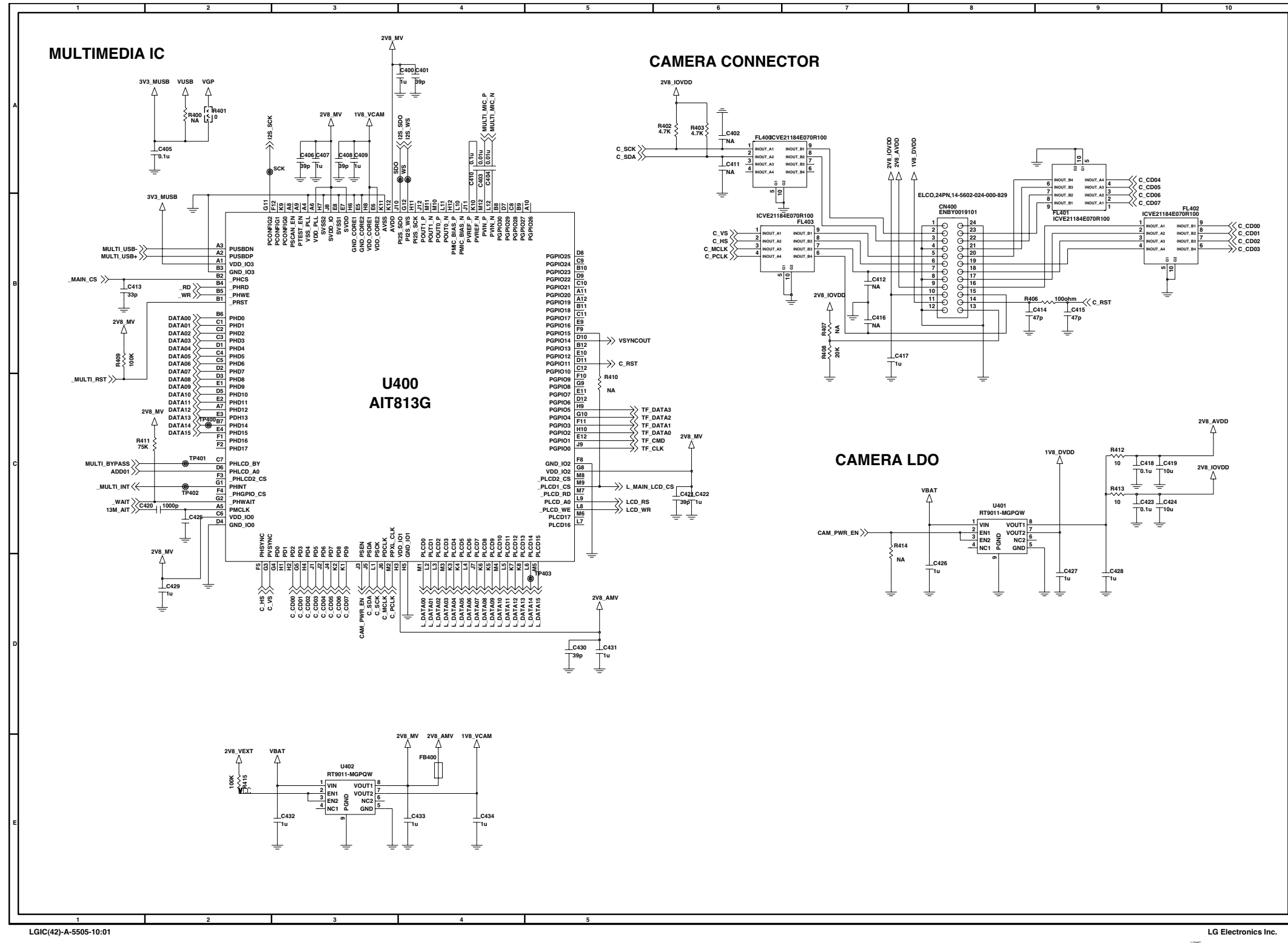
# 7. CIRCUIT DIAGRAM



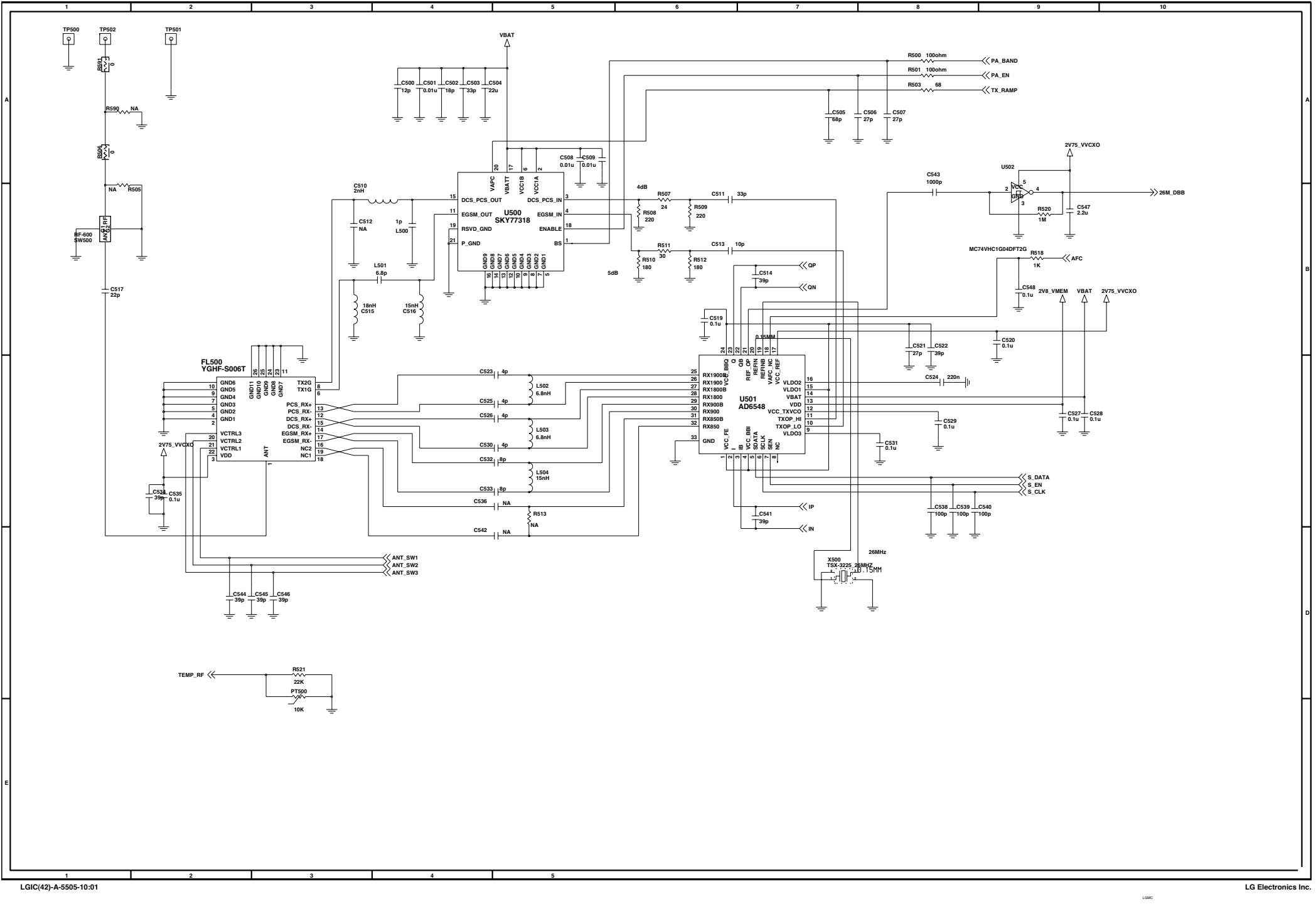
LGIC(42)-A-5505-10-01

LG Electronics Inc.

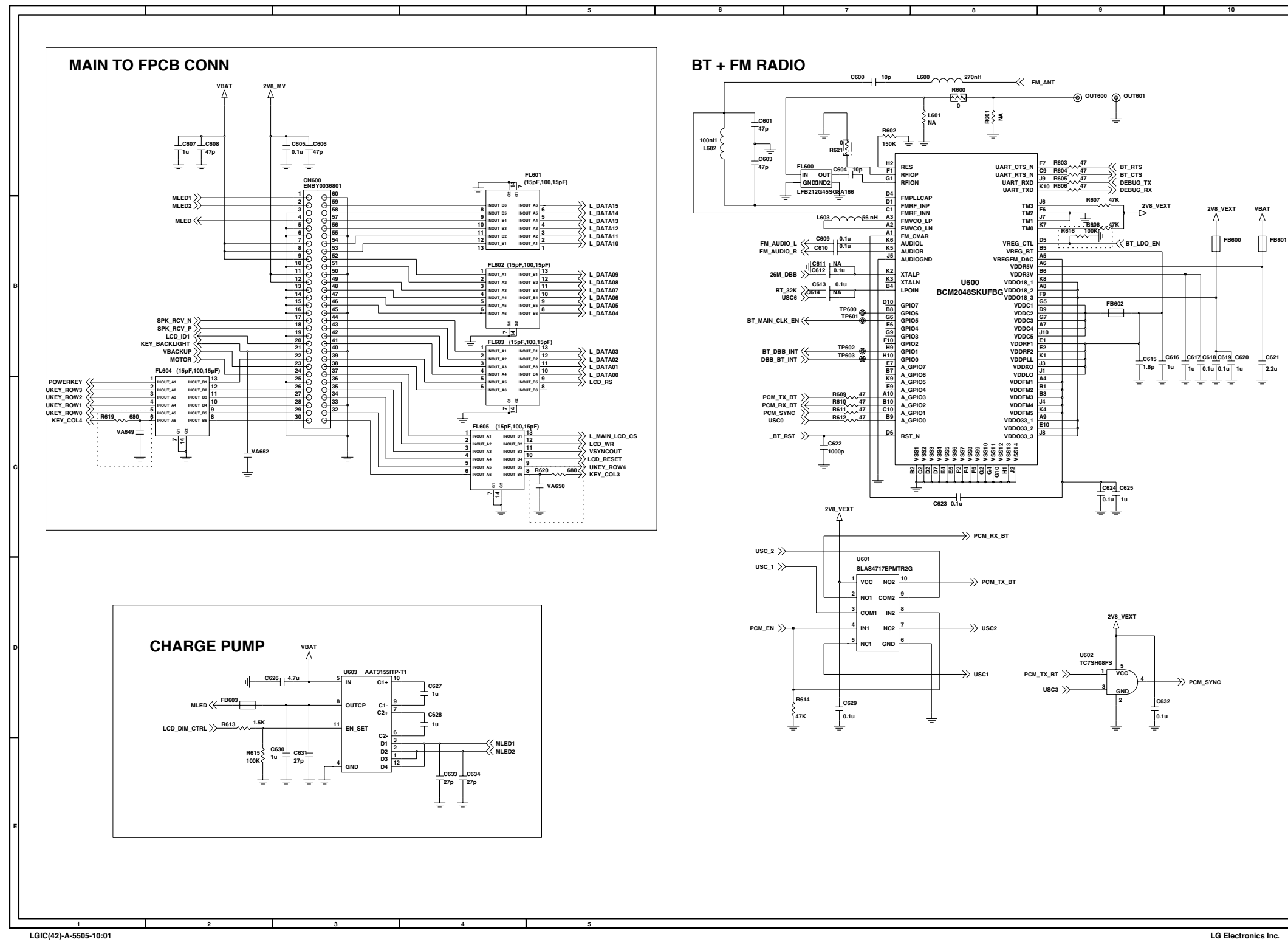
## CAMERA LDO



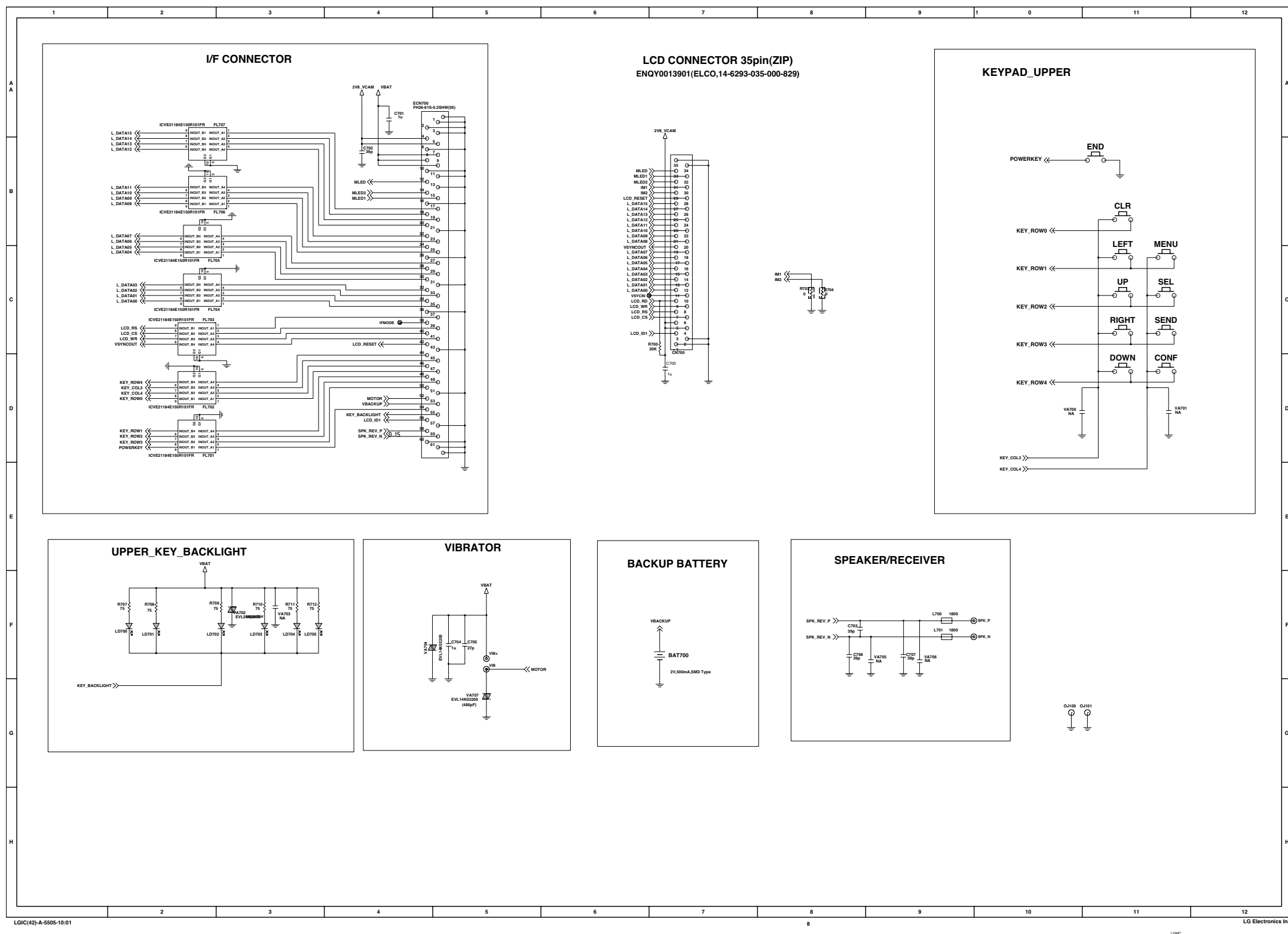
# 7. CIRCUIT DIAGRAM



## 7. CIRCUIT DIAGRAM

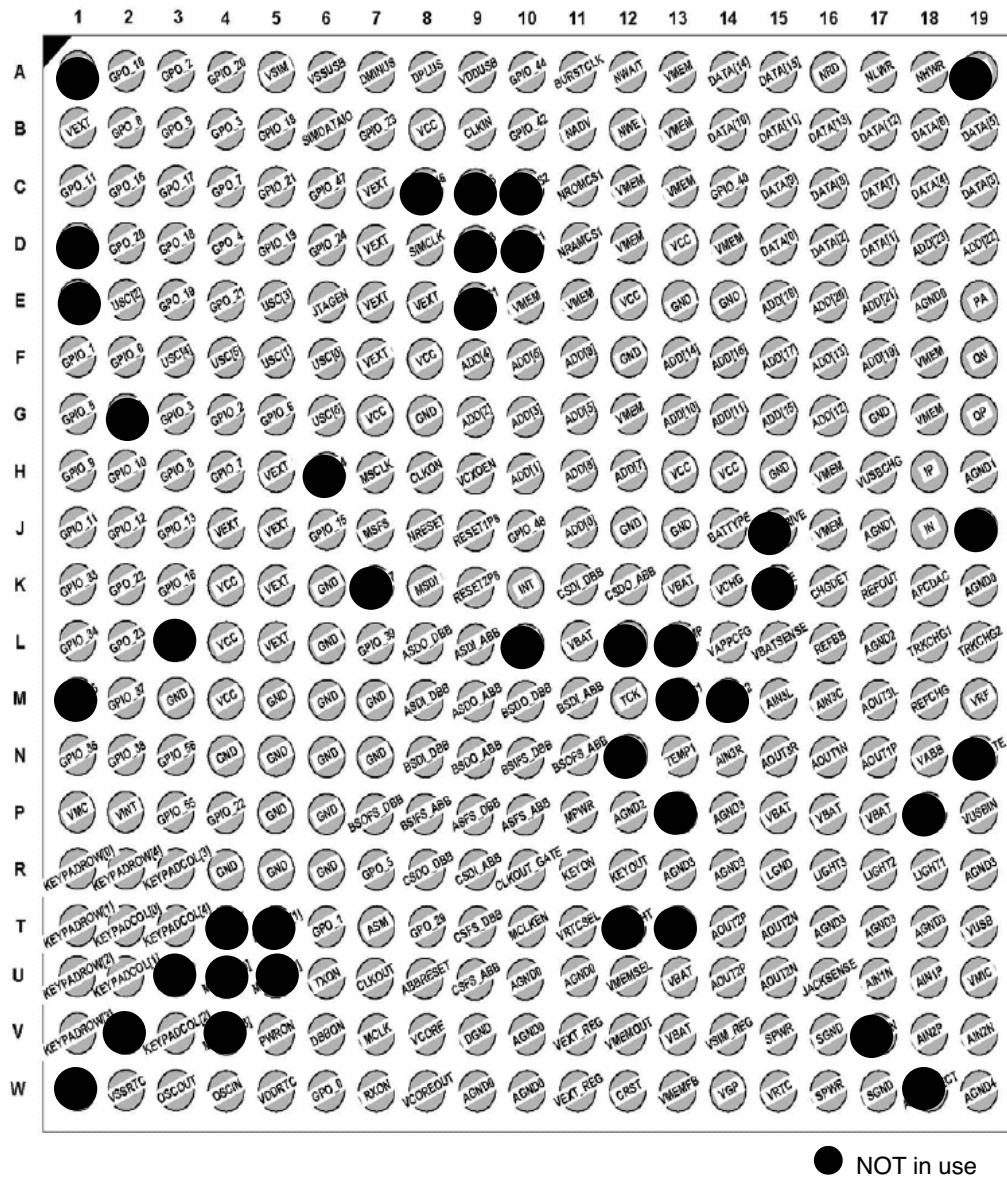


## 7. CIRCUIT DIAGRAM





## 8. BGA IC Pin Check



- AD6721 Pin Map (Top View) -

## 8. BGA IC Pin Check

M1	M2	M3	M4	M5				M9	M10	M11	M12
PLCD0	PPXL_CLK	PLCD3	PLCD10	PLCD15				PLCD1_CS_	POUT0_P	POUT1_N	PVIN_P
L1	L2	L3	L4	L5	L6		L8		L10	L11	L12
PSCK	PLCD1	PLCD2	PLCD6	PLCD11	PLCD14		PLCD_WE_		PMIC_BIAS_N	POUT0_N	PVIN_N
K1	K2	K3	K4	K5	K6	K7	K8	K9	K10	K11	K12
PD9	PD8	PLCD4	PLCD5	PLCD9	PLCD8	PLCD12	PLCD13	PCONFIG_0	PVREF_N	AVSS	AVDD
J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12
PD5	PD6	PSEN	PD7	PSDA	PDCLK	PLCD7	VDD_I2S	PGPIO0	PI2S_SDO	PVREF_P	POUT1_P
H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12
PD1	PD2	VDD_IO1	PD4	GND_IO1	GND_CORE	SVSS	VDD_CORE	PGPIO5	PGPIO2	PIS_SCK	PMIC_BIAS_P
G1	G2	G3	G4	G5			G8		G10	G11	G12
PHINT	PHWAIT_	PVSYNC	PD0	PD3			VDD_IO2		PGPIO4	PI2S_MCLK	PI2S_WS
		F3	F4	F5			F8	F9		F11	F12
		PHLCD2_CS_	PHGPIO_CS_	PHSYNC			GND_IO2	PGPIO15		PGPIO3	PCONFIG_1
E1	E2	E3	E4	E5	E6	E7	E8				E12
PHD9	PHD11	PHD13	PHD15	GND_CORE	VDD_CORE	SVDD	GND_I2S				PGPIO1
D1	D2	D3	D4	D5	D6	D7			D10	D11	
PHD4	PHD7	PHD8	GND_IO0	PHD10	PHLCD_A0	PGPIO29			PGPIO14	PGPIO11	
C1	C2	C3	C4	C5	C6	C7	C8				
PHD1	PHD2	PHD3	PHD5	PHD6	VDD_IO0	PHLCD_BY	PGPIO28				
B1	B2	B3	B4	B5	B6	B7	B8	B9			
PRST_	PHCS_	GND_IO3	PHRD_	PHWE_	PHD0	PHD14	PGPIO30	PGPIO27			
A1	A2	A3	A4	A5	A6	A7	A8	A9	A10		
VDD_IO3	PUSBDP	PUSBDN	VSS_PLL	PMCLK	VDD_PLL	PHD12	PSCAN_EN	PTEST_EN	PGPIO26		

[ Bottom View ]

NOT in use

- AIT813G Pin Map (Bottom View) -

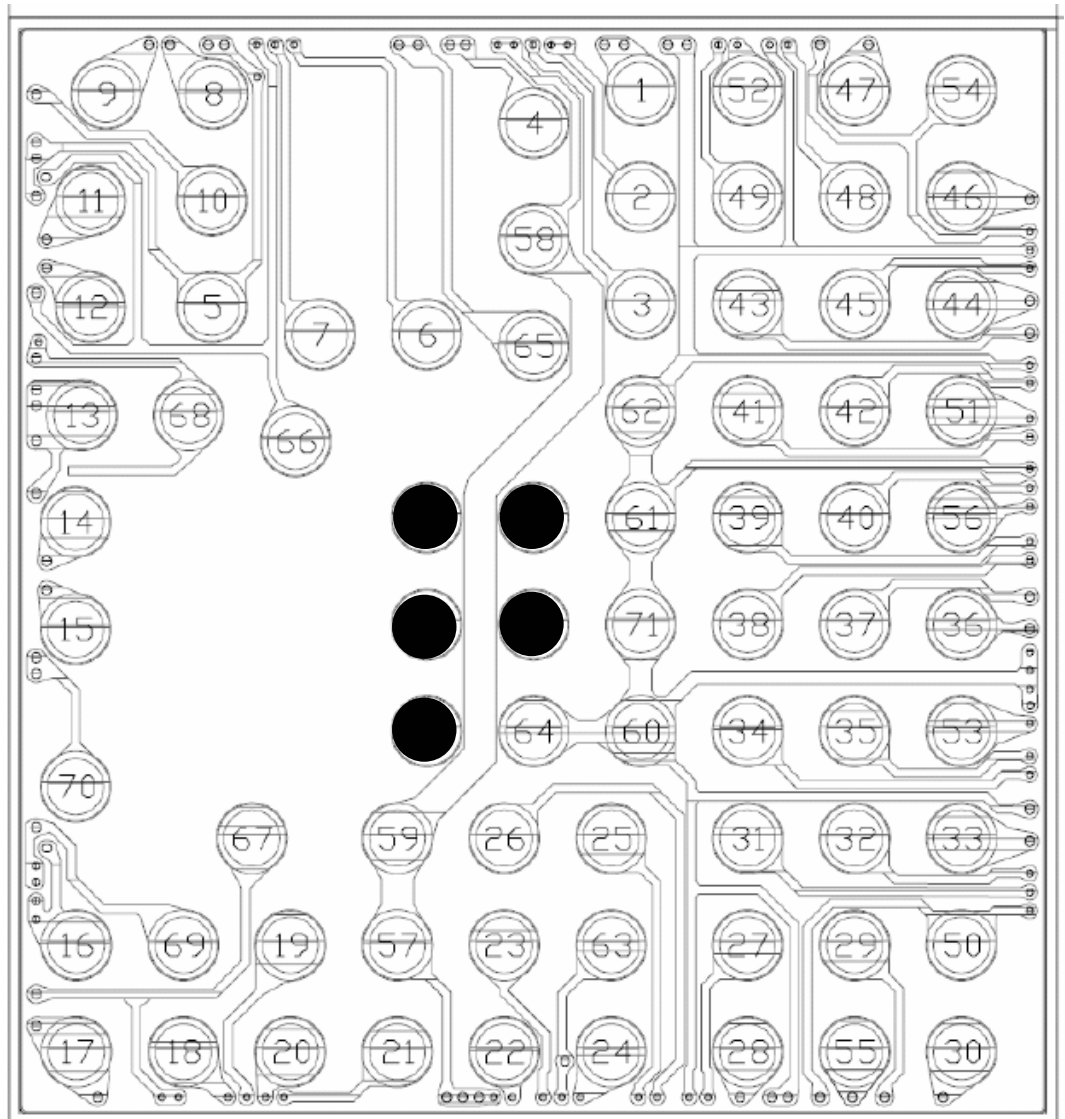
## 8. BGA IC Pin Check

Pin 1		1	2	3	4	5	6	7	8	
A										A
B		A4	A18	A19	VSS	F1-VCC	F2-VCC	A21	A11	B
C		A5	R LB#	A23	VSS	S-VSS	CLK	A22	A12	C
D		A3	A17	A24	FVPP#	R-WE#	F1-CE#	A9	A13	D
E		A2	A7	A25	F-WR#	ADV#	A20	A10	A15	E
F		A1	A6	R-UB#	F-RST#	F-WE#	A8	A14	A16	F
G		A0	DQ8	DQ2	DQ10	DQ5	DQ13	WAIT	F2-CE#	G
H		S-DE#	DQ0	DQ1	DQ3	DQ12	DQ14	DQ7	F2-DE#	H
J		S-CS1#	F1-DE#	DQ9	DQ11	DQ4	DQ6	DQ15	VCCQ	J
K		F1-CE#	F2-VSS	F3-CE#	S-VCC	F-VCC	F2-VCC	VCCQ	F-Master CS	K
L		VSS	VSS	VCCQ	F1-VCC	VSS	VSS	VSS	VSS	L
M										M
		1	2	3	4	5	6	7	8	

■ Not in Use

**U100 PF38F4050L0ZBQ0 (EUSY0229501) PIN MAP**

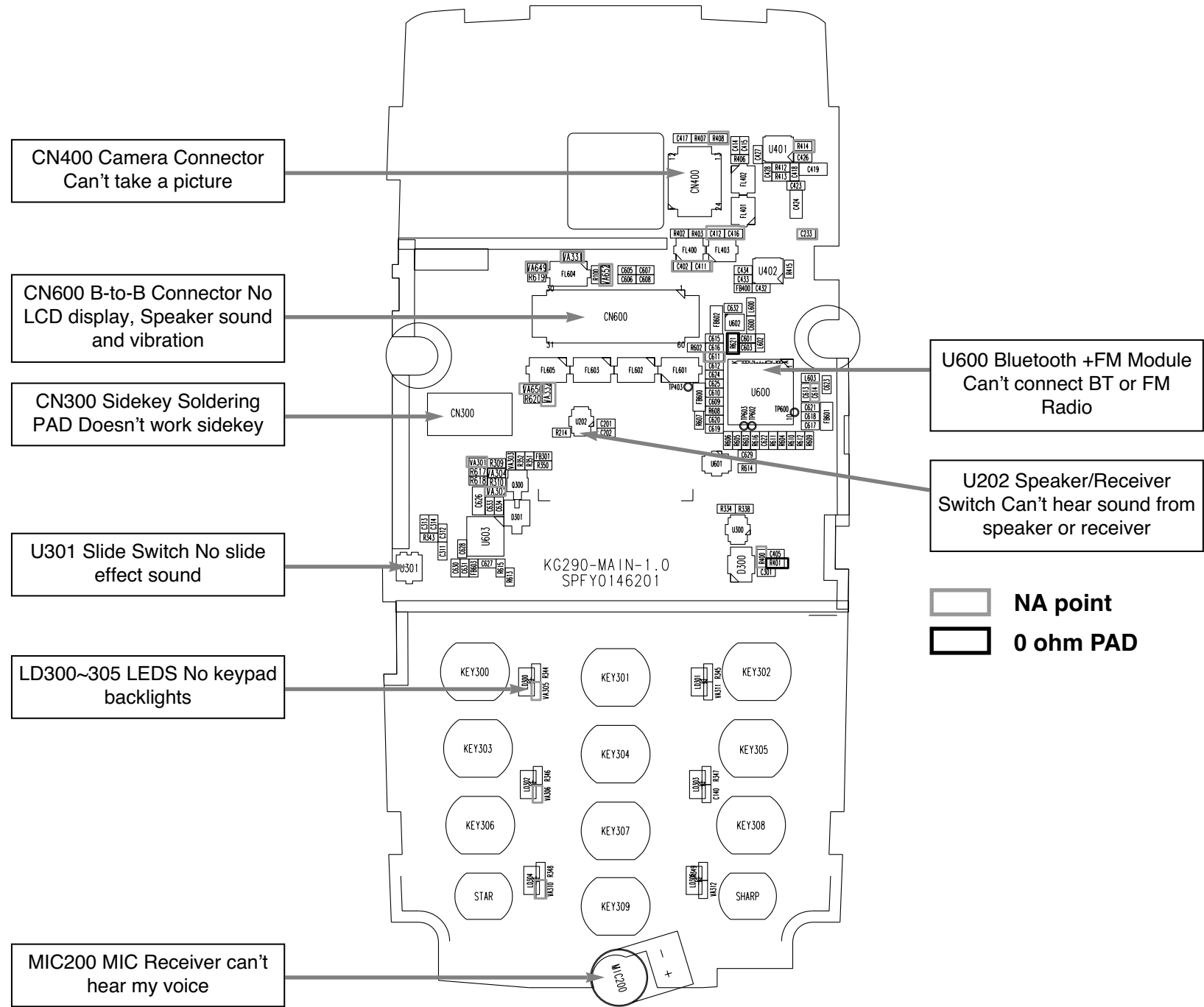
## 8. BGA IC Pin Check



● Not in Use

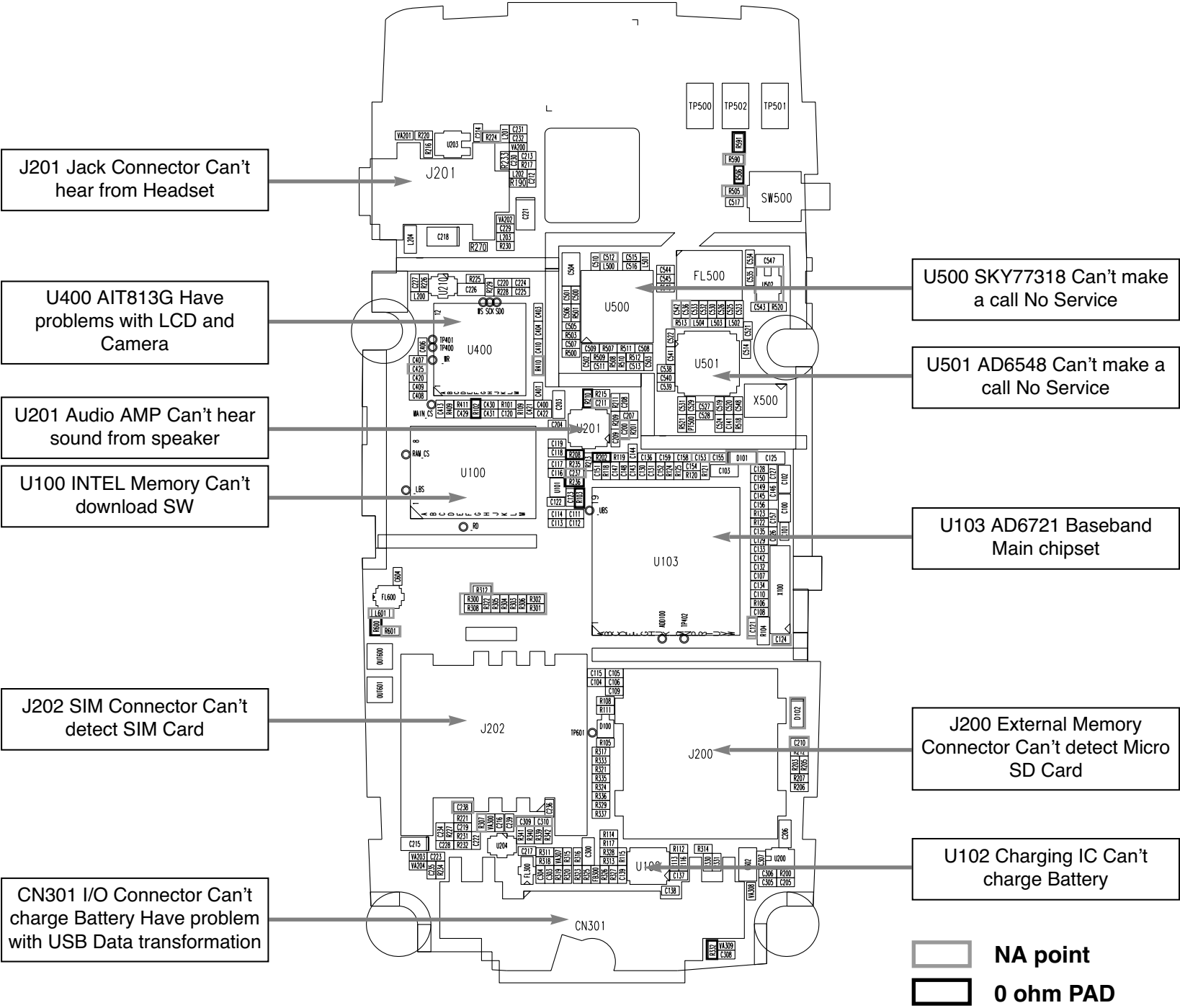
**U501 BCM2048 (EUSY0319601) PIN MAP**

# 9. PCB LAYOUT



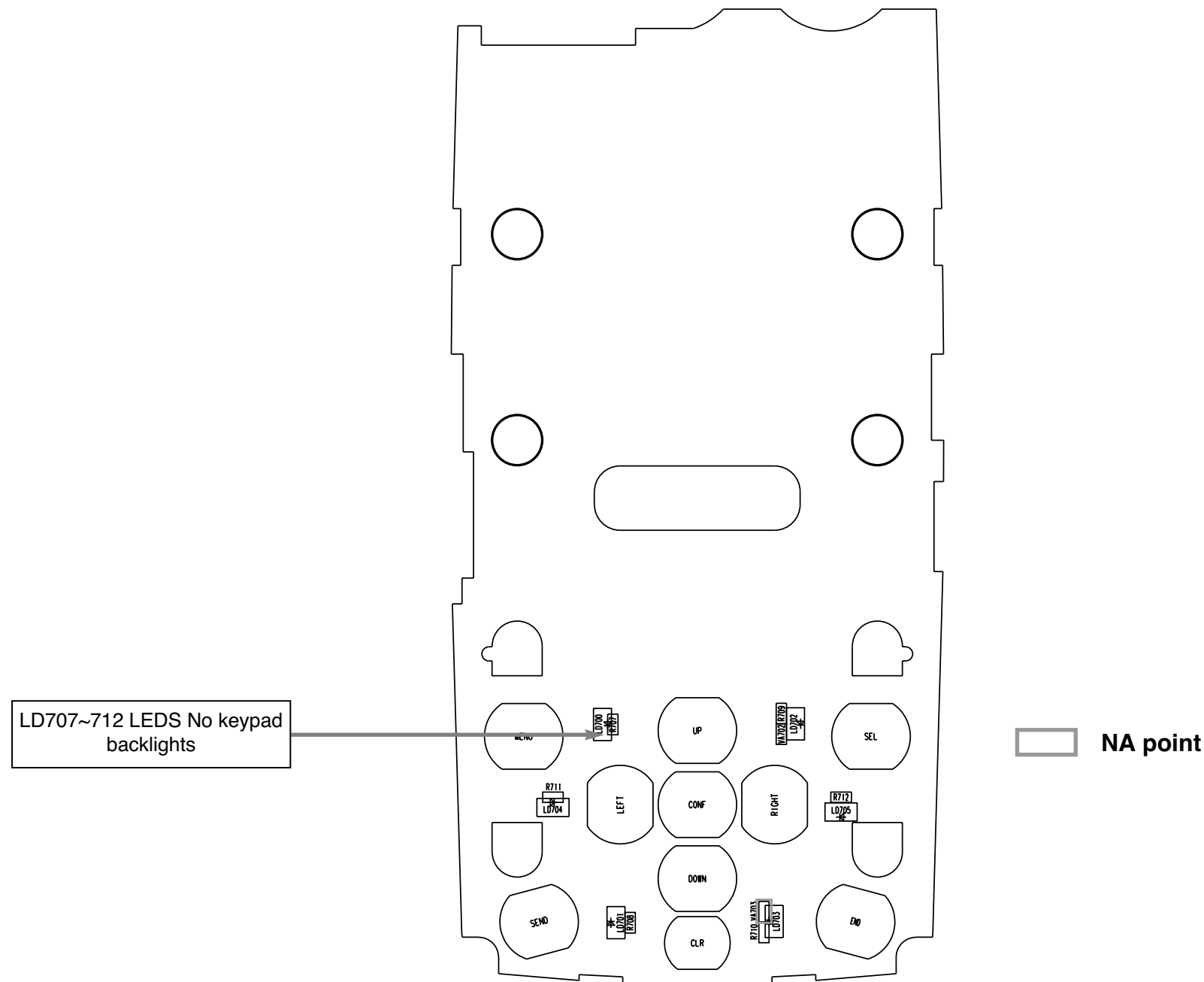
KG290/KG291-SPFY0146201-1.0-TOP

9. PCB LAYOUT



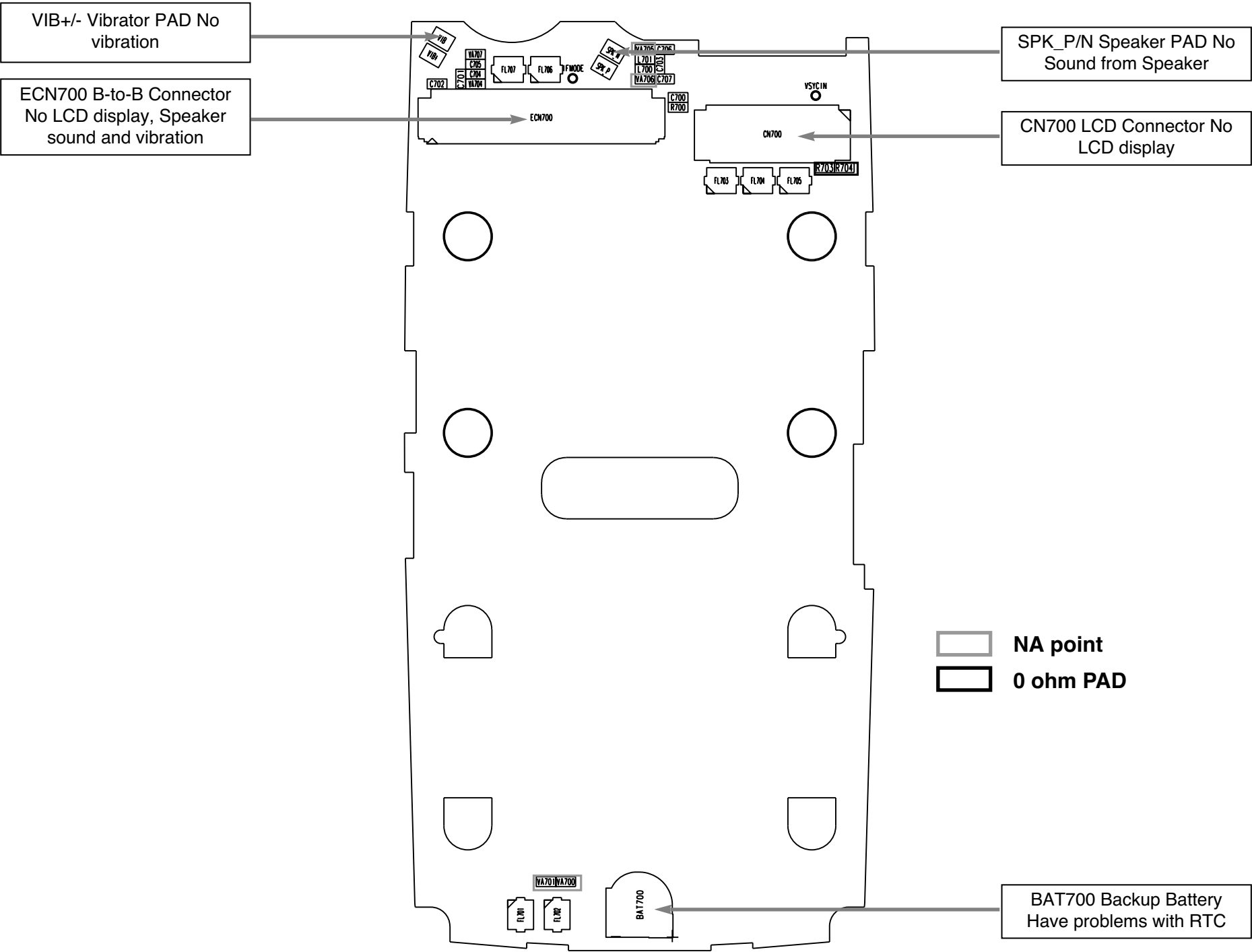
KG290/KG291 –SPFY0146201–1.0–BOT

9. PCB LAYOUT



KG290/KG291-UPPER-SPEY0047601-1.0

9. PCB LAYOUT



KG290/KG291-UPPER-SPEY0047601-1.0

## 10. ENGINEERING MODE

### A. About Engineering Mode

Engineering mode is designed to allow a service man/engineer to view and test the basic functions provided by a handset.

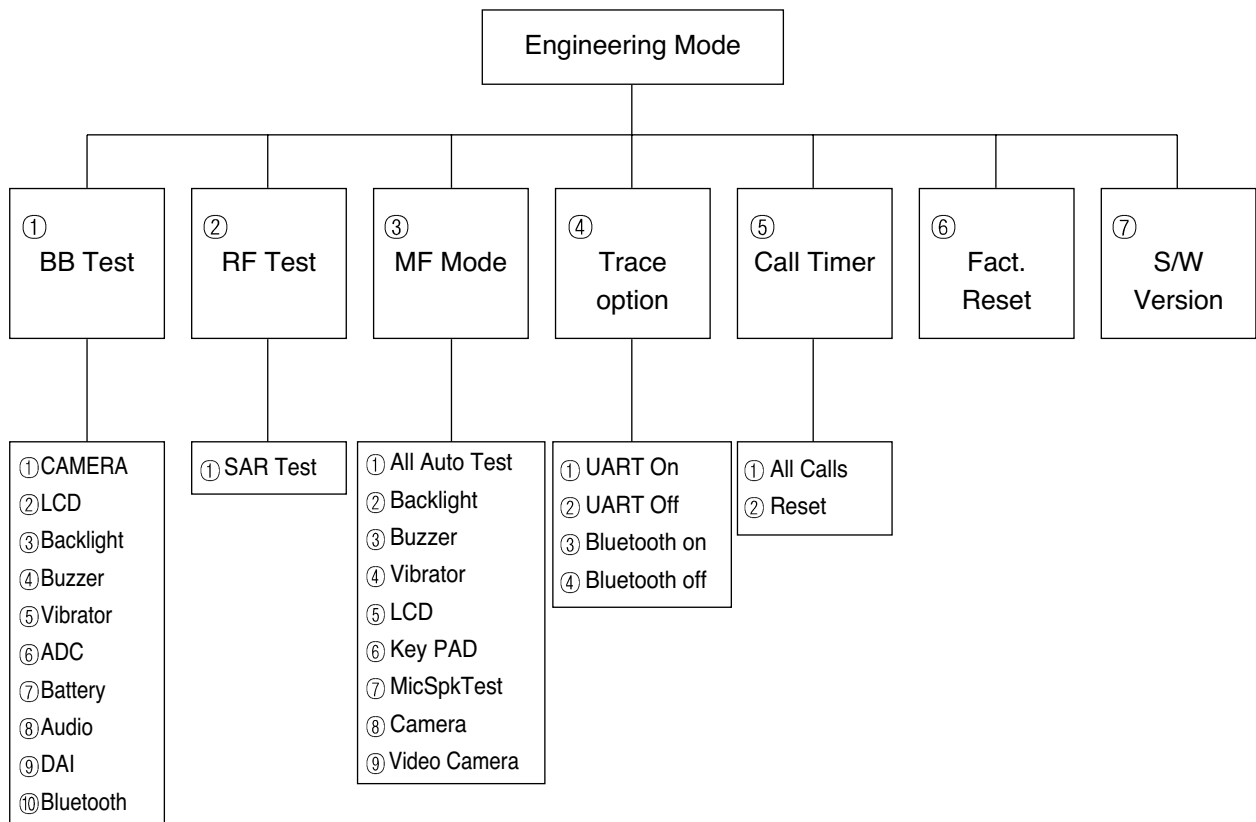
### B. Access Codes

The key sequence for switching the engineering mode on is 2945##. Pressing END will switch back to non-engineering mode operation.

### C. Key Operation

Use Up and Down key to select a menu and press 'select' key to progress the test. Pressing 'back' key will switch back to the original test menu.

### D. Engineering Mode Menu Tree



## 10. ENGINEERING MODE

---

### 10.1 BB Test [MENU 1]

#### 10.1.1 CAMERA

This menu is to test the Camera.

- 1) Main LCD preview : It shows the picture on Main LCD.

#### 10.1.2 LCD

- 1) COLOUR : WHITE, RED, GREEN, BLUE, BLACK
- 2) Contrast Value

#### 10.1.3 Backlight

This menu is to test the LCD Backlight and Keypad EL Backlight.

- 1) Backlight on : LCD Backlight and Keypad EL Backlight light on at the same time.
- 2) Backlight off : LCD Backlight and Keypad EL Backlight light off at the same time.
- 3) Backlight value : This controls brightness of Backlight. When entering into the menu, the present backlight-value in the phone is displayed. Use Left/Right key to adjust the level of brightness. The value of the brightness set at last will be saved in the NVRAM.

#### 10.1.4 Buzzer

This menu is to test the melody sound.

- 1) Melody on : Melody sound is played through the speaker.
- 2) Melody off : Melody sound is off.

#### 10.1.5 Vibrator

This menu is to test the vibration mode.

- 1) Vibrator on : Vibration mode is on.
- 2) Vibrator off : Vibration mode is off.

### 10.1.6 ADC (Analog to Digital Converter)

This displays the value of each ADC.

- 1) MVBAT ADC : Main Voltage Battery ADC
- 2) AUX ADC : Auxiliary ADC
- 3) TEMPER ADC : Temperature ADC

### 10.1.7 BATTERY

- 1) Bat Cal : This displays the value of Battery Calibration. The following menus are displayed in order :  
BAT\_LEV\_4V, BAT\_LEV\_3\_LIMIT, BAT\_LEV\_2\_LIMIT, BAT\_LEV\_1\_LIMIT, BAT\_IDLE\_LIMIT,  
BAT\_INCALL\_LIMIT, SHUT\_DOWN\_VOLTAGE, BAT\_RECHARGE\_LMT
- 2) TEMP Cal : This displays the value of Temperature Calibration. The following menus are displayed  
in order : TEMP\_HIGH\_LIMIT, TEMP\_HIGH\_RECHARGE\_LMT, TEMP\_LOW\_RECHARGE\_LMT,  
TEMP\_LOW\_LIMIT

### 10.1.8 Audio

This is a menu for setting the control register of Voiceband Baseband Codec chip.

Although the actual value can be written over, it returns to default value after switching off and on the phone.

- 1) VbControl1 : VbControl1 bit Register Value Setting
- 2) VbControl2 : VbControl2 bit Register Value Setting
- 3) VbControl3 : VbControl3 bit Register Value Setting
- 4) VbControl4 : VbControl4 bit Register Value Setting
- 5) VbControl5 : VbControl5 bit Register Value Setting
- 6) VbControl6 : VbControl6 bit Register Value Setting

### 10.1.0 DAI (Digital Audio Interface)

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

- 1) DAI AUDIO : DAI audio mode
- 2) DAI UPLINK : Speech encoder test
- 3) DAI DOWNLINK : Speech decoder test
- 4) DAI OFF : DAI mode off

## 10. ENGINEERING MODE

---

### 10.2 RF Test [MENU 2]

#### 10.2.1 SAR test

This menu is to test the Specific Absorption Rate.

- 1) SAR test on : Phone continuously process TX only. Call-setup equipment is not required.
- 2) SAR test off : TX process off

### 10.3 MF mode [MENU 3]

This manufacturing mode is designed to do the baseband test automatically. Selecting this menu will process the test automatically, and phone displays the previous menu after completing the test.

#### 10.3.1 All auto test

LCD, Backlight, Vibrator, Buzzer, Key Pad, Mic&Speaker,

#### 10.3.2 Backlight

LCD Backlight is on for about 1.5 seconds at the same time, then off.

#### 10.3.3 Buzzer

This menu is to test the volume of Melody. It rings in the following sequence. Volume 1, Volume 2, Volume 3, Volume 0 (mute), Volume 4, Volume 5.

#### 10.3.4 Vibrator

Vibrator is on for about 1.5 seconds.

#### 10.3.5 LCD

1)LCD

Main LCD screen resolution tests horizontally and vertically one by one and fills the screen.

#### 10.3.6 Key pad

When a pop-up message shows 'Press Any Key', you may press any keys including side keys, but not [Soft2 Key]. If the key is working properly, name of the key is displayed on the screen. Test will be completed in 15 seconds automatically.

### 10.3.7 MicSpk Test

The sound from MIC is recorded for about 3 seconds, then it is replayed on the speaker automatically.

### 10.3.8 Camera Test

This menu is to test camera(preview and capture automatically.)

### 10.3.9 Video Camera Test

This menu is to test video camera(record and play automatically.)

## 10.4 Trace option [MENU 4]

This is NOT a necessary menu to be used by neither engineers nor users.

## 10.5 Call timer [MENU 5]

This menu is to set the Digital Audio Interface Mode for Speech Transcoder and Acoustic testing.

1) All calls : This displays total conversation time. User cannot reset this value.

2) Reset settings : This resets total conversation time to this, [00:00:00].

## 10.6 Fact. Reset [MENU 6]

This Factory Reset menu is to format data block in the flash memory and this procedure set up the default value in data block.

### Attention

- ① Fact. Reset (i.e.Factory Reset) should be only used during the Manufacturing process.
- ② Servicemen should NOT progress this menu, otherwise some of valuable data such as Setting value, RF Calibration data, etc. cannot be restored again.

## 10.7 S/W version

This displays software version stored in the phone.

## 11. STAND ALONE TEST

---

## 11. STAND ALONE TEST

### 11.1 Introduction

This manual explains how to examine the status of RX and TX of the model.

#### A. Tx Test

TX test - this is to see if the transmitter of the phones is activating normally.

#### B. Rx Test

RX test - this is to see if the receiver of the phones is activating normally.

### 11.2 Setting Method

#### A. COM port

- a. Move your mouse on the "Connect" button, then click the right button of the mouse and select "Com setting".
- b. In the "Dialog Menu", select the values as explained below.
  - Port : select a correct COM port
  - Baud rate : 38400
  - Leave the rest as default values

#### B. Tx

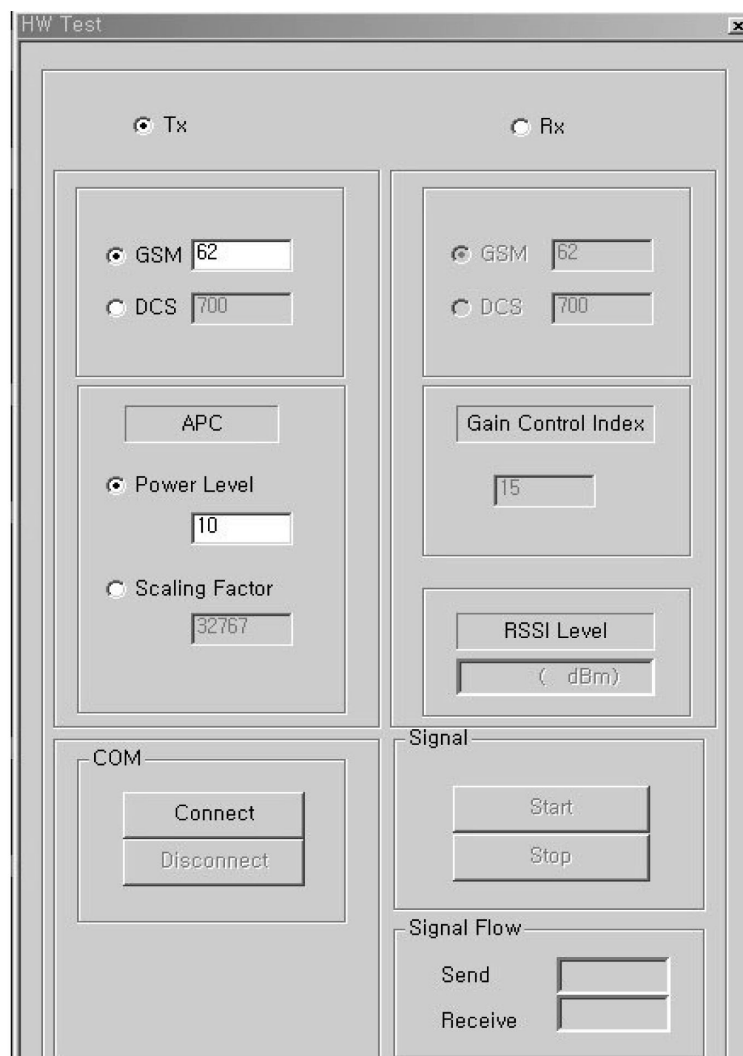
1. Selecting Channel
  - Select one of GSM or DCS Band and input appropriate channel.
2. Selecting APC
  - a. Select either Power level or Scaling Factor.
  - b. Power level
    - Input appropriate value GSM (between 5~19) or DCS (between 0~15)
  - c. Scaling Factor
    - A 'Ramp Factor' appears on the screen.
    - You may adjust the shape of the Ramp or directly input the values.

#### C. Rx

1. Selecting Channel
  - Select one of GSM or DCS Band and input appropriate channel.
2. Gain Control Index (0~ 26) and RSSI level
  - See if the value of RSSI is close to -16dBm when setting the value between 0 ~ 26 in Gain Control Index.
  - Normal phone should indicate the value of RSSI close to -16dBm.

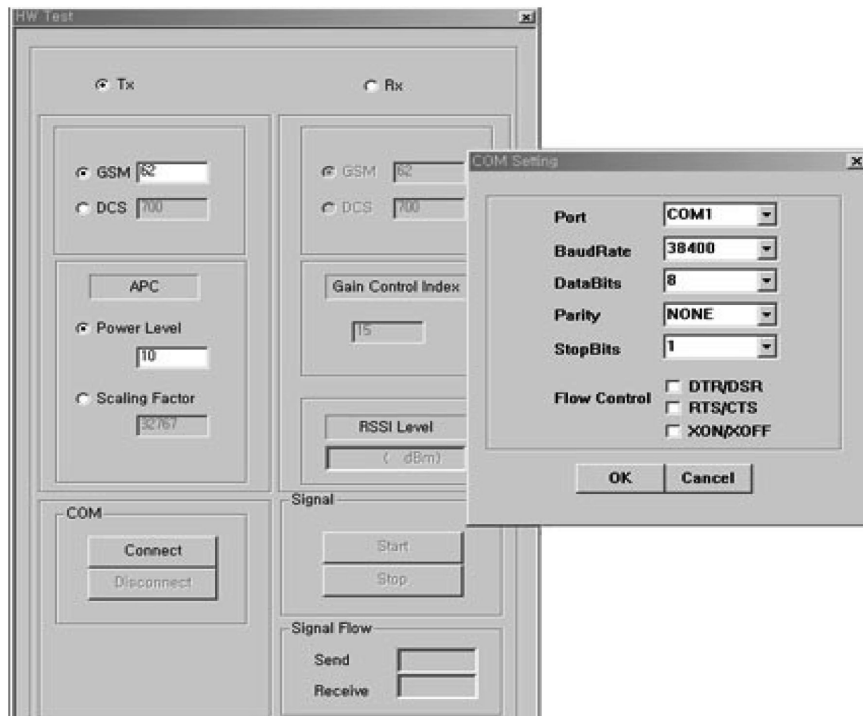
### 11.3 Means of Test

- Select a COM port
- Set the values in Tx or Rx
- Select band and channel
- After setting them all above, press connect button.
- Press the start button

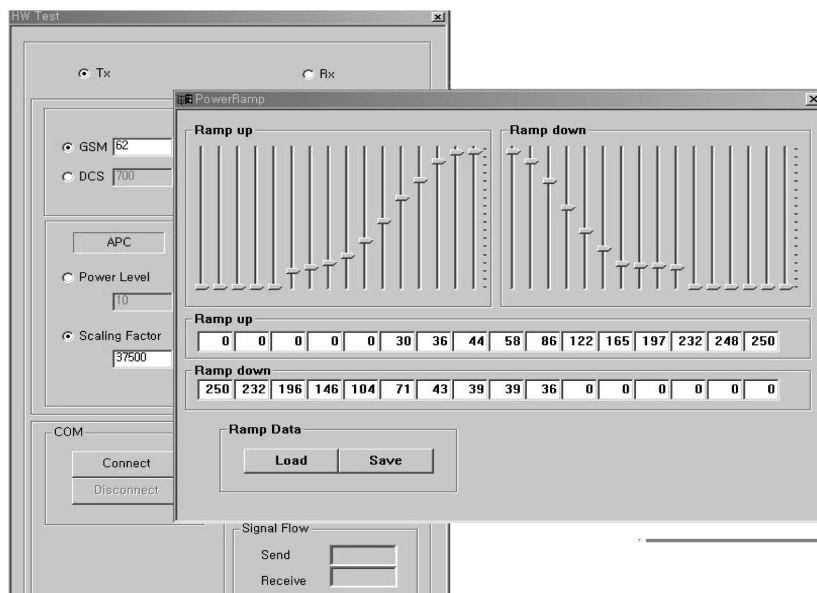


**Figure 11-1. HW test program**

## 11. STAND ALONE TEST



**Figure 11-2. HW test setting**



**Figure 11-3. Ramping profile**

## 12. AUTO CALIBRATION

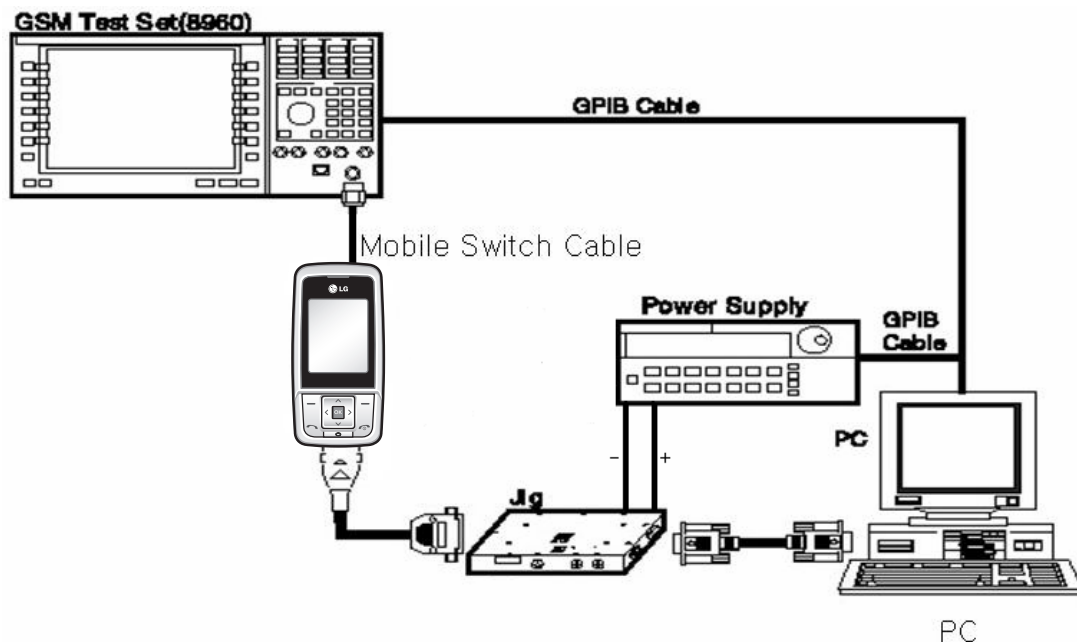
### 12.1 Overview

Auto-cal (Auto Calibration) is the PC side Calibration tool that perform Tx, Rx and Battery Calibration with Agilent 8960(GSM call setting instrument) and Tektronix PS2521G(Programmable Power supply). Auto-cal generates calibration data by communicating with phone and measuring equipment then write it into calibration data block of flash memory in GSM phone.

### 12.2 Equipment List

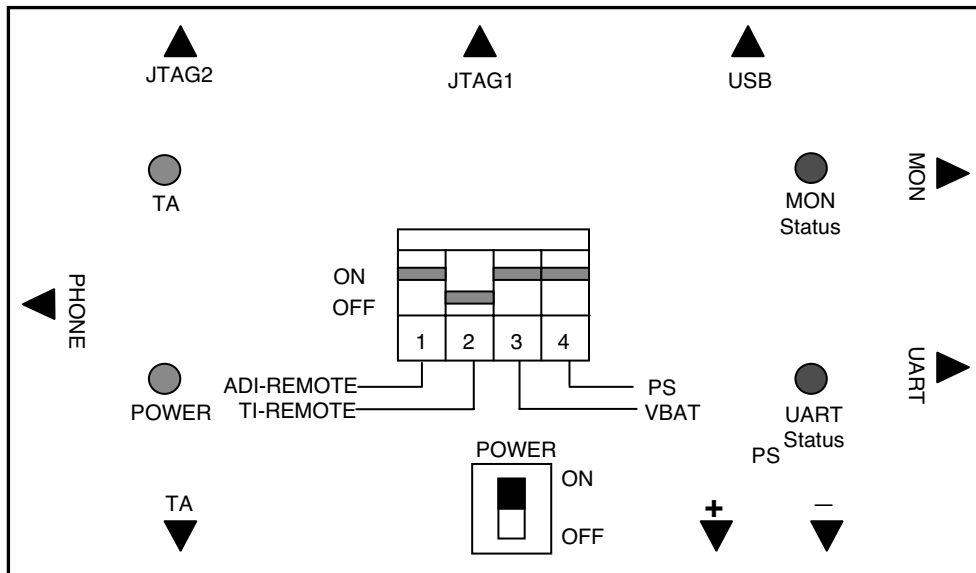
Equipment for Calibration	Type / Model	Brand
Wireless Communication Test Set	HP-8960	Agilent
RS-232 Cable and Test JIG		LG
RF Cable		LG
Power Supply	HP-66311B	Agilent
GPIO interface card	HP-GPIB	Agilent
Calibration & Final test software		LG
Test SIM Card		
PC (for Software Installation)	Pentium II class above 300MHz	

**Table 11-1. Calibration Equipment List.**



**Figure 12-1. Equipment Setup**

## 12. AUTO CALIBRATION



**Figure 12-2 The top view of Test JIG**

### 12.3 Test Jig Operation

Power Source	Description
Power Supply	Usually 4.0V

**Table 11-2 Jig Power**

Switch Number	Name	Description
Switch 1	ADI-REMOTE	In ON state, phone is awaked. It is used ADI chipset.
Switch 2	TI-REMOTE	In ON state, phone is awaked. It is used TI chipset.
Switch 3	VBAT	Power is provided for phone from battery
Switch 4	PS	Power is provided for phone from Power supply

**Table 11-3 Jig DIP Switch**

LED Number	Name	Description
LED 1	Power	Power is provided for Test Jig
LED 2	TA	Indicate charging state of the phone battery
LED 3	UART	Indicate data transfer state through the UART port
LED 4	MON	Indicate data transfer state through the MON port

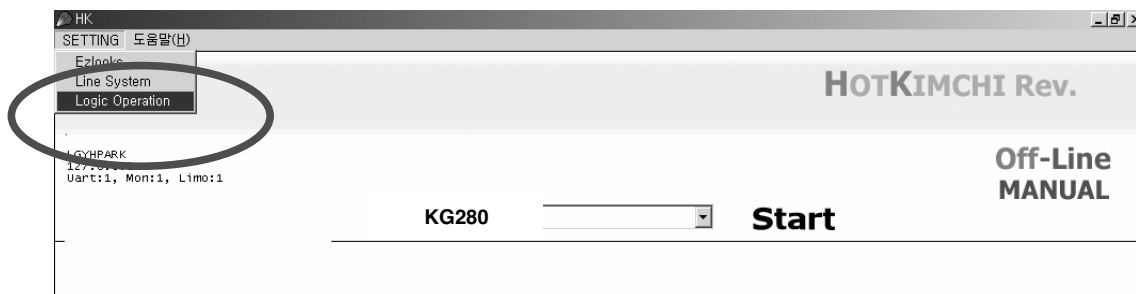
**Table 11-4 LED Description**

## 12. AUTO CALIBRATION

1. Connect as Fig 6-2(RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general)
2. Set the Power Supply 4.0V
3. Set the 3<sup>rd</sup>, 4<sup>th</sup> of DIP SW ON state always
4. Press the Phone power key, if the Remote ON is used, 1<sup>st</sup> ON state

### 12.4 Procedure

1. Connect as Fig 11-2 (RS232 serial cable is connected between COM port of PC and MON port of TEST JIG, in general.)
2. Run HK\_26.exe to start calibration.
3. From the Calibration SETTING->Logic Operation menu



## 12. AUTO CALIBRATION

---

4. Set PORT COM1 (using RS232 cable) & Logic Mode 1

**DLL Operating Mode**

DLL SERIAL AT: Normal

DLL SERIAL TM: Normal

DLL TESTER PWR: By-Pass

DLL TESTER CELL: Normal

**Equipment Choice**

WILLTEK 4405M

**RS 232C Setting**

MONitor Port : COM1

UART Port : COM1

LOGIC MODE : 1

**FILE NAME TYPE**

TIME

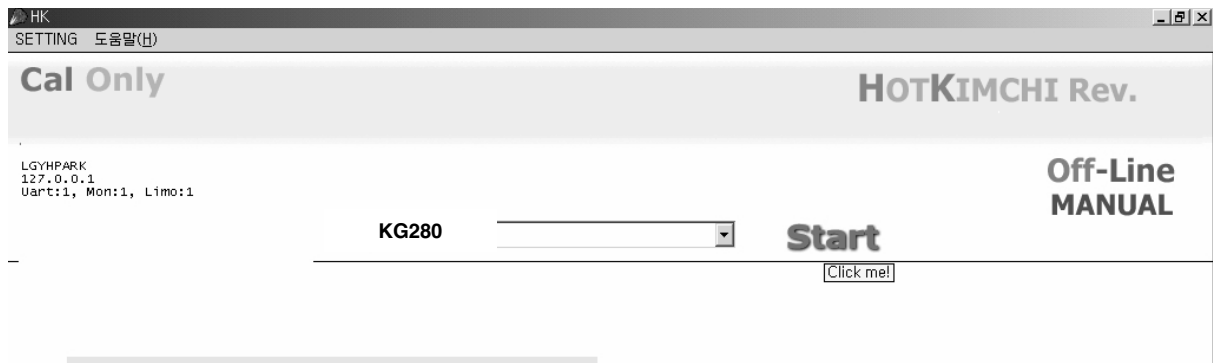
**Debugging Info Folder :**

c:\WCM\_GSM Folder Browse...

APPLY OK

## 12. AUTO CALIBRATION

5. Select KG290/KG291 and then Click Start



## 12. AUTO CALIBRATION

---

### 12.5 AGC

This procedure is for Rx calibration.

In this procedure, We can get RSSI correction value. Set band EGSM and press Start button the result window will show correction values per every power level and gain code and the same measure is performed per every frequency.

### 12.6 APC

This procedure is for Tx calibration.

In this procedure you can get proper scale factor value and measured power level.

### 12.7 ADC

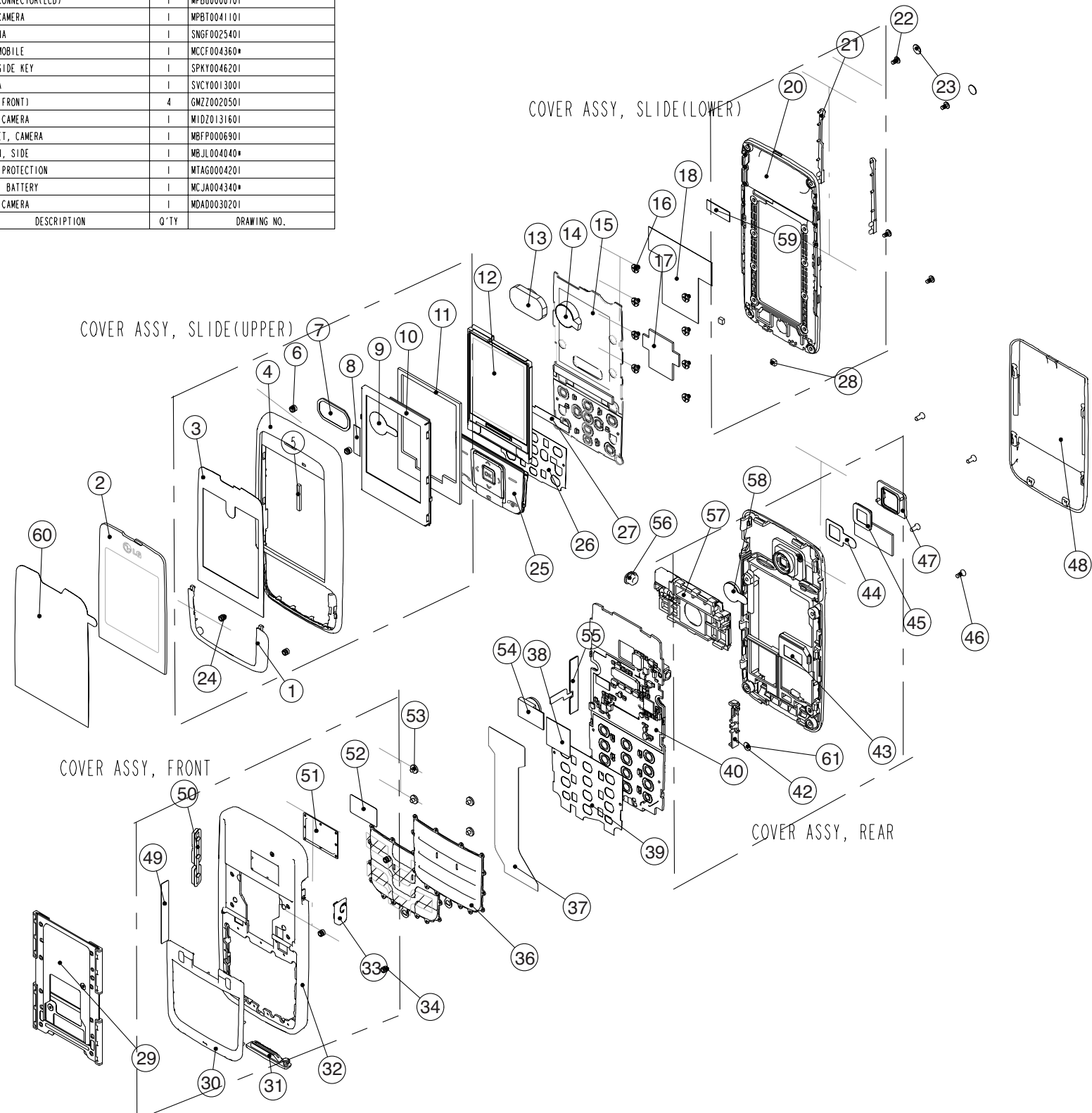
This procedure is for battery calibration.

You can get main Battery Config Table and temperature Config Table will be reset.

13. EXPLODED VIEW & REPLACEMENT PART LIST

13.1 EXPLODED VIEW

61	A/S LABEL	I	MLAB0001102
60	TAPE, PROTECTION	I	MTAB0171001
59	PAD, CONNECTOR(LCD)	I	MPBU0000701
58	PAD, CAMERA	I	MPBT0041101
57	ANTENNA	I	SNGF0025401
56	CAP, MOBILE	I	MCCF004360*
55	PCB, SIDE KEY	I	SPKY0046201
54	CAMERA	I	SVCY0013001
53	SCREW(FRONT)	4	GMZZ0020501
52	TAPE, CAMERA	I	MIDZ0131601
51	BRACKET, CAMERA	I	MBFP0006901
50	BUTTON, SIDE	I	MBJL004040*
49	TAPE, PROTECTION	I	MTAG0004201
48	COVER, BATTERY	I	MCJA004340*
47	DECO, CAMERA	I	MDAD0030201
NO	DESCRIPTION	Q'TY	DRAWING NO.



46	SCREW(MAIN)	4	GMZZ0018401
45	WINDOW, CAMERA	I	MWAE002560*
44	TAPE, WINDOW CAMERA	I	MTAA0135701
43	COVER, REAR	I	MCJN006760*
42	ANTENNA, BT	I	SNGF0025301
41	SHIELD CAN	I	MCBA0018601
40	ASSY, PCB(MAIN)	I	SAFB**
39	DOME ASSY, METAL	I	ADCA0066101
38	PAD, PCB(MAIN)	I	MPBF0022501
37	MAIN, F-PCB	I	SACE0053501
36	KEYPAD, MAIN	I	MBJA002590*
35	PAD, MAIN CONN.	I	MPBU0000901
34	INSERT, FRONT	4	**
33	CAP, EARJACK	I	MCCC004480*
32	COVER, FRONT	I	MCJK007120*
31	CAP, RECEPTICLE	I	MCCE003730*
30	DECO, FRONT	I	MDAG002730*
29	ASSY, HINGE	I	AHFB00029**
28	PAD, STOPPER	2	MSGB0019301
27	GASKET, LCD	I	MTAC0047601
26	DOME ASSY, METAL	I	ADCA0066001
25	KEYPAD, SLIDE	I	MBJL004030*
24	INSERT, DECO(UPPER)	2	**
23	CAP, SCREW	I	MCCH010520*
22	SCREW	4	GMEY0012901
21	GUIDE, SLIDE(L,R)	2	MGDB000430*
			MGDA000890*
20	COVER, SLIDE(LOWER)	I	MCJV001090*
19	PAD, VIBRATOR	I	MPBJ0044001
18	INSULATOR, PCB(SLIDE)	I	MIDZ0131701
17	PAD, PCB(SLIDE)	I	MPBF0021801
16	SCREW	8	GMZZ0022101
15	PCB, ASSY	I	SAEE**
14	VIBRATOR	I	SJMY0006506
13	SPEAKER	I	SUSY0025301
12	LCD	I	SVLM0025101
11	PAD, LCD	I	MPBG0060901
10	BRACKET, LCD	I	MBFF0013101
9	TAPE, VIBRATOR	I	MTAF0012501
8	GASKET, VIBRATOR	I	
7	TAPE, SPEAKER	I	MFBC0031101
6	INSERT, UPPER	I	**
5	MAGNET, SWITCH	I	MMAA0005201
4	COVER, SLIDE(UPPER)	I	MCJW001270*
3	TAPE, WINDOW	I	MTAD0068601
2	WINDOW, LCD	I	MWAC007900*
1	DECO, FOLDER(UPPER)	I	MDAE003970*



## 13. EXPLODED VIEW & REPLACEMENT PART LIST

### 13.2 Replacement Parts <Mechanic component>

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
1		GSM(SLIDE)	TGLL0009138		Silver	
2	AAAY00	ADDITION	AAAY0213404		GRAY SILVER	
3	MCJA00	COVER,BATTERY	MCJA0043401	MOLD, PC LUPOY SC-1004A, , , , ,	GRAY SILVER	48
2	APEY00	PHONE	APEY0416003		GRAY SILVER	
3	ACGM00	COVER ASSY,REAR	ACGM0089901		GRAY SILVER	
4	MCJN00	COVER,REAR	MCJN0067601	MOLD, PC LUPOY SC-1004A, , , , ,	GRAY SILVER	43
4	MDAD00	DECO,CAMERA	MDAD0030201	MOLD, ABS AF-308, , , , ,	Silver	47
4	MLAB00	LABEL,A/S	MLAB0001102	C2000 USASV DIA 4.0	White	61
4	MPBT00	PAD,CAMERA	MPBT0041101	COMPLEX, (empty), , , , ,	Without Color	58
4	MTAA00	TAPE,DECO	MTAA0135701	COMPLEX, (empty), , , , ,	Without Color	44
4	MTAA01	TAPE,DECO	MTAA0151001	COMPLEX, (empty), , , , ,	Without Color	
4	MWAE00	WINDOW,CAMERA	MWAE0025601	CUTTING, PMMA MR 200, , , , ,	GRAY SILVER	45
4	SNGF00	ANTENNA,GSM,FIXED	SNGF0025401	3.0 ,-2 dBd,, ,internal, GSM900/DCS1800/PCS1900 ,; ,TRIPLE ,-2.0 ,50 ,3.0		42,57
4	SNGF01	ANTENNA,GSM,FIXED	SNGF0025301	3.0 ,-2.0 dBd,, ,internla, bluetooth ,; ,SINGLE ,-2.0 ,50 ,3.0		
3	ACGQ00	COVER ASSY,SLIDE	ACGQ0018001		GRAY SILVER	
4	ACGK00	COVER ASSY,FRONT	ACGK0088801		GRAY SILVER	
5	MBFP00	BRACKET,CAMERA	MBFP0006901	PRESS, STS, 0.2t, , , , ,	Without Color	51
5	MBJL00	BUTTON,SIDE	MBJL0040401	COMPLEX, (empty), , , , ,	GRAY SILVER	50
5	MCCC00	CAP,EARPHONE JACK	MCCC0044801	MOLD, Urethane Rubber S190A, , , , ,	GRAY SILVER	33
5	MCCE00	CAP,RECEPTACLE	MCCE0037301	MOLD, Urethane Rubber S190A, , , , ,	GRAY SILVER	
5	MCJK00	COVER,FRONT	MCJK0071201	MOLD, PC LEXAN EXL4419, , , , ,	GRAY SILVER	32
5	MDAG00	DECO,FRONT	MDAG0027301	MOLD, POM TX-31, , , , ,	GRAY SILVER	30
5	MIDZ00	INSULATOR	MIDZ0131601	COMPLEX, (empty), , , , ,	Without Color	52
5	MTAG00	TAPE,BUTTON	MTAG0004201	COMPLEX, (empty), , , , ,	Without Color	49
4	ACGR00	COVER ASSY,SLIDE(LOWER)	ACGR0010501		GRAY SILVER	

## 13. EXPLODED VIEW & REPLACEMENT PART LIST

5	MCJV00	COVER,SLIDE(LOWER)	MCJV0010901	MOLD, PC LEXAN EXL4419, , , , ,	GRAY SILVER	20
5	MGDA00	GUIDE,LEFT	MGDA0008901	MOLD, POM TX-31, , , , ,	GRAY SILVER	
5	MGDB00	GUIDE,RIGHT	MGDB0004301	MOLD, POM TX-31, , , , ,	GRAY SILVER	21
5	MPBU00	PAD,CONNECTOR	MPBU0000701	COMPLEX, (empty), , , , ,	Without Color	35,59
5	MSGB00	STOPPER,HINGE	MSGB0019301	MOLD, Urethane Rubber S190A, , , , ,	GRAY SILVER	28
4	ACGS00	COVER ASSY,SLIDE(UPPER)	ACGS0011901		GRAY SILVER	
5	MBFF00	BRACKET,LCD	MBFF0013101	PRESS, STS, 0.4t, , , ,	Without Color	
5	MCJW00	COVER,SLIDE(UPPER)	MCJW0012701	MOLD, PC LUPOY SC-1004A, , , , ,	GRAY SILVER	4
5	MDAE00	DECO,FOLDER(UPPER)	MDAE0039701	MOLD, PC LUPOY SC-1004A, , , , ,	GRAY SILVER	1
5	MFBC00	FILTER,SPEAKER	MFBC0031101	COMPLEX, (empty), , , , ,	Without Color	7
5	MMAA00	MAGNET,SWITCH	MMAA0005201		Metal Silver	5
5	MPBG00	PAD,LCD	MPBG0060901	COMPLEX, (empty), , , , ,	Without Color	11
5	MTAC00	TAPE,SHIELD	MTAC0054701		Without Color	
5	MTAD00	TAPE,WINDOW	MTAD0068601	COMPLEX, (empty), , , , ,	Without Color	3
5	MTAF00	TAPE,MOTOR	MTAF0012501	COMPLEX, (empty), , , , ,	Without Color	9
4	AHFB00	HINGE ASSY,SLIDE	AHFB0002904	35H37B Silver	Silver	29
4	GMEY00	SCREW MACHINE,BIND	GMEY0012901	1.4 mm,2.5 mm,MSWR3 ,B ,+ ,	Silver	22
4	GMZZ00	SCREW MACHINE	GMZZ0022101	1.4 mm,1.7 mm,MSWR3(BK) ,A ,+ , - ,	Without Color	16,46,53
4	GMZZ01	SCREW MACHINE	GMZZ0020501	3.5 mm,1.5 mm,SWCH18A ,A ,+ , - ,	Black	
4	MBJL00	BUTTON,SIDE	MBJL0040301	COMPLEX, (empty), , , , ,	GRAY SILVER	25
4	MCCH00	CAP,SCREW	MCCH0105201	COMPLEX, (empty), , , , ,	GRAY SILVER	23
4	MGAD00	GASKET,SHIELD FORM	MGAD0148701		Without Color	
4	MIDZ00	INSULATOR	MIDZ0131701	COMPLEX, (empty), , , , ,	Without Color	18
4	MPBF00	PAD,FLEXIBLE PCB	MPBF0021801	COMPLEX, (empty), , , , ,	Without Color	17
4	MPBJ00	PAD,MOTOR	MPBJ0044001	COMPLEX, (empty), , , , ,	Without Color	19
4	MPBQ00	PAD,LCD(SUB)	MPBQ0033401	COMPLEX, (empty), , , , ,	Without Color	
4	MPBU00	PAD,CONNECTOR	MPBU0000901	COMPLEX, (empty), , , , ,	Without Color	
4	MTAB00	TAPE,PROTECTION	MTAB0171001	COMPLEX, (empty), , , , ,	Without Color	60
4	MTAC00	TAPE,SHIELD	MTAC0047601	COMPLEX, (empty), , , , ,	Without Color	27
4	MWAC00	WINDOW,LCD	MWAC0079001	CUTTING, PMMA MR 200, , , , ,	GRAY SILVER	2
3	MBJA00	BUTTON,DIAL	MBJA0024101	COMPLEX, (empty), , , , ,	GRAY SILVER	36
3	MCCF00	CAP,MOBILE SWITCH	MCCF0043601	MOLD, Urethane Rubber S190A, , , , ,	GRAY SILVER	56

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

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3	MLAK00	LABEL,MODEL	MLAK0021701	COMPLEX, (empty), , , ,	Without Color	
6	MCBA00	CAN,SHIELD	MCBA0018601	PRESS, STS, 0.2t, , , ,	Without Color	
6	MGAD00	GASKET,SHIELD FORM	MGAD0148601	COMPLEX, (empty), , , ,	Without Color	

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

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Level	Location No.	Description	Part Number	Spec	Color	Remark
7	R700	RES,CHIP,MAKER	ERHZ0000438	20 Kohm,1/16W ,J ,1005 ,R/TP		
7	VA704	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005		
7	VA707	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005		
6	SAED00	PCB ASSY,KEYPAD,SMT TOP	SAED0022101			
7	LD700	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD701	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD702	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD703	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD704	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	LD705	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
7	R707	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
7	R708	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
7	R709	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
7	R710	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
7	R711	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
7	R712	RES,CHIP,MAKER	ERHZ0000509	75 ohm,1/16W ,J ,1005 ,R/TP		
7	VA702	VARISTOR	SEVY0003901	5.5 V, ,SMD ,480pF, 1005		
6	SPEY00	PCB,KEYPAD	SPEY0047601	FR-4 ,0.5 mm,BUILD-UP 6 , , , , , , , , , ,		
4	SJMY00	VIBRATOR,MOTOR	SJMY0006506	3 V,0.08 A,10*3.45 ,17mm		14
4	SUSY00	SPEAKER	SUSY0025301	ASSY ,8 ohm,88 dB, mm,Wire 10mm , , , , , , , ,18*10*3T ,WIRE		13
4	SVLM00	LCD MODULE	SVLM0025101	MAIN ,1.77"(128*160) ,34*48.1*1.9 ,262k ,TFT ,TM ,S6D0144 ,		12
3	GMZZ00	SCREW MACHINE	GMZZ0018401	1.4 mm,30 mm,MSWR3(BK) ,N ,+ , - ,NYLOK,HEAD PIE2.5	Black	
3	SAFY00	PCB ASSY,MAIN	SAFY0203903			
4	SAFB00	PCB ASSY,MAIN,INSERT	SAFB0072801			
5	ACKA00	CAN ASSY,SHIELD	ACKA0003101	KG290 tesco	GRAY SILVER	
5	ADCA00	DOME ASSY,METAL	ADCA0066101	MAIN	Without Color	39
5	MPBF00	PAD,FLEXIBLE PCB	MPBF0022501	COMPLEX, (empty), , , , ,	Without Color	38
5	SPKY00	PCB,SIDEKEY	SPKY0046201	POLYI ,0.2 mm,DOUBLE , , , , , , , , , ,		55
5	SUMY00	MICROPHONE	SUMY0004901	FPCB ,42 dB,4*15 ,		
4	SAFF00	PCB ASSY,MAIN,SMT	SAFF0125103			
5	MLAZ00	LABEL	MLAZ0038301	PID Label 4 Array	Without Color	
5	SAFC00	PCB ASSY,MAIN,SMT BOTTOM	SAFC0091701			
6	C100	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C101	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

## 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C102	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C103	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C104	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C105	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C106	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C107	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C108	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C109	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C110	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C111	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C112	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C113	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C114	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C115	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C116	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C117	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C118	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C119	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C120	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C122	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C123	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C125	CAP,CERAMIC,CHIP	ECCH0005602	2.2 uF,16V ,K ,X5R ,HD ,1608 ,R/TP		
6	C126	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C127	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C128	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C129	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C130	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C131	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C132	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C133	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C134	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C135	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C136	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C137	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C138	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C139	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C141	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C142	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C143	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C144	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C145	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C146	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C147	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C148	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C149	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C150	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C151	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C152	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C154	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C155	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C156	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C157	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C158	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C159	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C203	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C204	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C205	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C206	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C207	CAP,CHIP,MAKER	ECZH0001213	0.47 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C208	CAP,CHIP,MAKER	ECZH0001213	0.47 uF,6.3V ,Z ,Y5V ,TC ,1005 ,R/TP		
6	C209	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C212	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C213	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C214	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C215	CAP,TANTAL,CHIP	ECTH0003701	10 uF,6.3V ,M ,L_ESR ,1608 ,R/TP		
6	C216	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C217	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	C218	CAP,TANTAL,CHIP	ECTH0005202	100 uF,4V ,M ,L_ESR ,2012 ,R/TP ,; , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty]		
6	C219	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C220	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C221	CAP,TANTAL,CHIP	ECTH0005202	100 uF,4V ,M ,L_ESR ,2012 ,R/TP ,; , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty] , [empty]		
6	C222	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C223	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		

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Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C224	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C225	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C226	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C227	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C228	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C229	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C230	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C231	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C232	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C234	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C235	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C236	CAP,CHIP,MAKER	ECZH0001211	220 nF,10V ,Z ,Y5V ,HD ,1005 ,R/TP		
6	C239	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C300	CAP,CERAMIC,CHIP	ECCH0006201	4.7 uF,6.3V ,K ,X5R ,TC ,1608 ,R/TP		
6	C302	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C303	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C304	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C305	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C306	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C307	CAP,CERAMIC,CHIP	ECCH0000104	3 pF,50V,C,NP0,TC,1005,R/TP		
6	C308	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C400	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C401	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C403	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C404	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C406	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C407	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C408	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C409	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C410	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C413	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C420	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C421	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C422	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C429	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C430	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C431	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C500	CAP,CHIP,MAKER	ECZH0000816	12 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C501	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C502	CAP,CERAMIC,CHIP	ECCH0000113	18 pF,50V,J,NP0,TC,1005,R/TP		
6	C503	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C504	CAP,CERAMIC,CHIP	ECCH0000393	22 uF,6.3V ,M ,X5R ,HD ,2012 ,R/TP		
6	C505	CAP,CHIP,MAKER	ECZH0000844	68 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C506	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C507	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C508	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C509	CAP,CERAMIC,CHIP	ECCH0000155	10 nF,16V,K,X7R,HD,1005,R/TP		
6	C510	INDUCTOR,CHIP	ELCH0012508	2 nH,S ,1005 ,R/TP ,Film chip, tolerance0.1nH		
6	C511	CAP,CHIP,MAKER	ECZH0000830	33 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C513	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C514	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C515	INDUCTOR,CHIP	ELCH0001402	18 nH,J ,1005 ,R/TP ,Pb Free		
6	C516	INDUCTOR,CHIP	ELCH0004710	15 nH,J ,1005 ,R/TP ,		
6	C517	CAP,CERAMIC,CHIP	ECCH0000115	22 pF,50V,J,NP0,TC,1005,R/TP		
6	C519	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C520	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C521	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C522	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C523	CAP,CERAMIC,CHIP	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP		
6	C524	CAP,CHIP,MAKER	ECZH0001216	220 nF,10V ,K ,X5R ,TC ,1005 ,R/TP		
6	C525	CAP,CERAMIC,CHIP	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP		
6	C526	CAP,CERAMIC,CHIP	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP		
6	C527	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C528	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C529	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C530	CAP,CERAMIC,CHIP	ECCH0000105	4 pF,50V,C,NP0,TC,1005,R/TP		
6	C531	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C532	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP		
6	C533	CAP,CERAMIC,CHIP	ECCH0000109	8 pF,50V,D,NP0,TC,1005,R/TP		
6	C534	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C535	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C538	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C539	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C540	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		

## 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C541	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C543	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	C544	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C545	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C546	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C547	CAP,CHIP,MAKER	ECZH0001421	2.2 uF,6.3V ,K ,X5R ,HD ,1608 ,R/TP		
6	C548	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C604	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	CN301	CONNECTOR,I/O	ENRY0003501	24 PIN,0.5 mm,ANGLE , ,		
6	D100	DIODE,SWITCHING	EDSY0017301	VSM ,15 V,100 mA,R/TP ,PB-FREE		
6	FB300	FILTER,BEAD,CHIP	SFBH0010144	31 ohm,1005 ,chip bead		
6	FL300	FILTER,EMI/POWER	SFEY0007101	SMD ,1CH,1608Feedthru ESD/EMI filter for power Pb-free		
6	FL500	FILTER,SEPERATOR	SFAY0007203	900 ,1800.1900 , dB, dB, dB, dB,ETC ,Tri-band FEM		
6	FL600	FILTER,CERAMIC	SFCY0000901	2450 MHz,2.00*1.25*0.95 ,SMD ,Bluetooth Band Pass Filter		
6	J200	CONN,SOCKET	ENSY0017701	8 PIN,ETC , , mm, Micro-SD, Hinge type		
6	J201	CONN,JACK/PLUG,EARPHONE	ENJE0003102	4 ,4 PIN,BOSS-2		
6	J202	CONN,SOCKET	ENSY0018701	6 PIN,ETC , ,2.54 mm,H=1.8		
6	L200	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	L201	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	L202	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	L203	FILTER,BEAD,CHIP	SFBH0008102	1800 ohm,1005 ,Bead		
6	L204	INDUCTOR,CHIP	ELCH0001511	100 nH,J ,1608 ,R/TP ,PBFREE		
6	L500	CAP,CERAMIC,CHIP	ECCH0000101	.5 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	L501	CAP,CERAMIC,CHIP	ECCH0001001	6.8 pF,50V ,C ,NP0 ,TC ,1005 ,R/TP		
6	L502	INDUCTOR,CHIP	ELCH0009109	6.8 nH,J ,1005 ,R/TP ,chip coil		
6	L503	INDUCTOR,CHIP	ELCH0009109	6.8 nH,J ,1005 ,R/TP ,chip coil		
6	L504	INDUCTOR,CHIP	ELCH0004710	15 nH,J ,1005 ,R/TP ,		
6	PT500	THERMISTOR	SETY0006301	NTC ,10000 ohm,SMD ,1005, 3350~3399k, J, R/T, PBFREE		
6	R101	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R104	RES,CHIP	ERHY0000512	10M ohm,1/16W,J,1608,R/TP		
6	R105	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R106	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R108	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R109	RES,CHIP,MAKER	ERHZ0000465	3300 ohm,1/16W ,J ,1005 ,R/TP		
6	R111	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R112	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R113	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R114	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R115	RES,CHIP,MAKER	ERHZ0000466	33 Kohm,1/16W ,J ,1005 ,R/TP		
6	R116	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R117	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R118	RES,CHIP,MAKER	ERHZ0000320	82 Kohm,1/16W ,F ,1005 ,R/TP		
6	R119	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R120	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R121	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R122	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R123	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R124	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R125	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R190	RES,CHIP,MAKER	ERHZ0000488	4.7 ohm,1/16W ,J ,1005 ,R/TP		
6	R200	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R201	RES,CHIP,MAKER	ERHZ0000476	39 Kohm,1/16W ,J ,1005 ,R/TP		
6	R203	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R205	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R206	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R207	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R209	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R211	RES,CHIP,MAKER	ERHZ0000405	10 Kohm,1/16W ,J ,1005 ,R/TP		
6	R212	RES,CHIP,MAKER	ERHZ0000288	470 Kohm,1/16W ,F ,1005 ,R/TP		
6	R213	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R215	RES,CHIP,MAKER	ERHZ0000476	39 Kohm,1/16W ,J ,1005 ,R/TP		
6	R216	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
6	R217	RES,CHIP,MAKER	ERHZ0000435	20 ohm,1/16W ,J ,1005 ,R/TP		
6	R220	RES,CHIP,MAKER	ERHZ0000445	220 Kohm,1/16W ,J ,1005 ,R/TP		
6	R221	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R225	RES,CHIP,MAKER	ERHZ0000459	3 Kohm,1/16W ,J ,1005 ,R/TP		
6	R226	RES,CHIP,MAKER	ERHZ0000540	7.5 ohm,1/16W ,J ,1005 ,R/TP		
6	R227	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R228	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	R229	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R230	RES,CHIP,MAKER	ERHZ0000540	7.5 ohm,1/16W ,J ,1005 ,R/TP		
6	R231	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		

## 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R232	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R233	RES,CHIP,MAKER	ERHZ0000407	1000 Kohm,1/16W ,J ,1005 ,R/TP		
6	R234	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R235	RES,CHIP,MAKER	ERHZ0000422	15 Kohm,1/16W ,J ,1005 ,R/TP		
6	R270	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R311	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R313	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R314	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R315	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R316	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R317	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R318	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R319	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R320	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R321	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R323	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R324	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R325	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R326	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R327	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R328	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R329	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R330	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R331	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R333	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R335	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R336	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R337	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R339	RES,CHIP,MAKER	ERHZ0002401	12 Kohm,1/16W ,J ,1005 ,R/TP		
6	R340	RES,CHIP,MAKER	ERHZ0002401	12 Kohm,1/16W ,J ,1005 ,R/TP		
6	R341	RES,CHIP,MAKER	ERHZ0002401	12 Kohm,1/16W ,J ,1005 ,R/TP		
6	R342	RES,CHIP,MAKER	ERHZ0002401	12 Kohm,1/16W ,J ,1005 ,R/TP		
6	R409	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R411	RES,CHIP	ERHY0000150	75K ohm,1/16W,F,1005,R/TP		
6	R500	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R501	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R503	RES,CHIP,MAKER	ERHZ0000504	68 ohm,1/16W ,J ,1005 ,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R507	RES,CHIP,MAKER	ERHZ0000522	24 ohm,1/16W ,J ,1005 ,R/TP		
6	R508	RES,CHIP	ERHY0003501	220 ohm,1/16W ,J ,1005 ,R/TP		
6	R509	RES,CHIP	ERHY0003501	220 ohm,1/16W ,J ,1005 ,R/TP		
6	R510	RES,CHIP,MAKER	ERHZ0000429	180 ohm,1/16W ,J ,1005 ,R/TP		
6	R511	RES,CHIP,MAKER	ERHZ0000457	30 ohm,1/16W ,J ,1005 ,R/TP		
6	R512	RES,CHIP,MAKER	ERHZ0000429	180 ohm,1/16W ,J ,1005 ,R/TP		
6	R518	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R520	RES,CHIP,MAKER	ERHZ0000401	0 ohm,1/16W ,J ,1005 ,R/TP		
6	R521	RES,CHIP,MAKER	ERHZ0000244	22 Kohm,1/16W ,F ,1005 ,R/TP		
6	SW500	CONN,RF SWITCH	ENWY0004201	,DIP , dB,H=2.8, Angle Type		
6	U100	IC	EUSY0229501	88 BALL MATRIX SCSP (8*11*1.2) ,80 PIN,R/TP ,256M + 64M PSRAM / IO 3.0V / BOTTOM BOOT / PB FREE		
6	U101	IC	EUSY0227901	SON5-P-0.35(fSV) ,5 PIN,R/TP ,2-INPUT AND GATE, Pb Free		
6	U102	IC	EUSY0254701	DFN 3*3*0.9 ,10 PIN,R/TP ,Charger IC, I Max 1A, Wall Adaptor/USB Charger		
6	U103	IC	EUSY0321501	BGA ,361 PIN,R/TP ,13*13		
6	U200	IC	EUSY0223002	HVSOF5 ,5 PIN,R/TP ,150mA CMOS LDO WITH OUTPUT CONTROL / 2.8V		
6	U201	IC	EUSY0335701	QFN ,8 PIN,R/TP ,1.2W, Mono, Differencial Audio AMP		
6	U203	IC	EUSY0250501	SC70 ,5 PIN,R/TP ,Comparator, pin compatible to EUSY0077701		
6	U204	IC	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
6	U210	IC	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
6	U400	IC	EUSY0342901	BGA ,144 PIN,R/TP ,1.3M,QCIF15,MP3 ,; ,IC,Digital Signal Processors		
6	U500	PAM	SMPY0014001	35.5 dBm,56 % ,A, dBc, dB,6x6x1.15 ,SMD ,Tri Band		
6	U501	IC	EUSY0280101	LFCSP-32 ,32 PIN,R/TP ,GSM QUAD BAND TRANSCEIVER, Othello G.		
6	VA200	CAP,CHIP,MAKER	ECZH0000813	100 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	VA201	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	VA202	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	VA203	VARISTOR	SEVY0003901	5.5 V ,SMD ,480pF, 1005		
6	VA204	VARISTOR	SEVY0003901	5.5 V ,SMD ,480pF, 1005		
6	VA300	VARISTOR	SEVY0003901	5.5 V ,SMD ,480pF, 1005		
6	VA307	VARISTOR	SEVY0003901	5.5 V ,SMD ,480pF, 1005		
6	VA308	VARISTOR	SEVY0003901	5.5 V ,SMD ,480pF, 1005		
6	X100	X-TAL	EXXY0004602	.032768 MHz,20 PPM,12.5 pF,65000 ohm,SMD 6.9*1.4*1.3 ,		

## 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	X500	X-TAL	EXXY0024401	26 MHz,10 PPM,10 pF,,5 ohm,SMD ,32*25*0.6 ,,, , ,10PPM ,10 ,,, ,SMD ,P/TP		
5	SAFD00	PCB ASSY,MAIN,SMT TOP	SAFD0091101			
6	C140	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C201	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C202	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C301	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C311	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C312	VARISTOR	SEVY0003901	5.5 V , ,SMD ,480pF, 1005		
6	C313	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C314	CAP,CERAMIC,CHIP	ECCH0000120	39 pF,50V,J,NP0,TC,1005,R/TP		
6	C405	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C414	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C415	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C417	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C418	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C419	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C423	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C424	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C426	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C427	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C428	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C432	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C433	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C434	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C600	CAP,CERAMIC,CHIP	ECCH0000110	10 pF,50V,D,NP0,TC,1005,R/TP		
6	C601	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C603	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C605	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C606	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C607	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C608	CAP,CERAMIC,CHIP	ECCH0000122	47 pF,50V,J,NP0,TC,1005,R/TP		
6	C609	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C610	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C612	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C613	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C615	CAP,CERAMIC,CHIP	ECCH0000178	1.8 pF,50V ,D ,NP0 ,TC ,1005 ,R/TP		

### 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	C616	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C617	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C618	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C619	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C620	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C621	CAP,CERAMIC,CHIP	ECCH0000198	2.2 uF,6.3V ,M ,X5R ,TC ,1005 ,R/TP		
6	C622	CAP,CERAMIC,CHIP	ECCH0000143	1 nF,50V,K,X7R,HD,1005,R/TP		
6	C623	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C624	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C625	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C626	CAP,CERAMIC,CHIP	ECCH0005604	10 uF,6.3V ,M ,X5R ,TC ,1608 ,R/TP		
6	C627	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C628	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C629	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C630	CAP,CERAMIC,CHIP	ECCH0004904	1 uF,6.3V ,K ,X5R ,TC ,1005 ,R/TP		
6	C631	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C632	CAP,CERAMIC,CHIP	ECCH0000182	0.1 uF,10V ,K ,X5R ,HD ,1005 ,R/TP		
6	C633	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	C634	CAP,CHIP,MAKER	ECZH0000826	27 pF,50V ,J ,NP0 ,TC ,1005 ,R/TP		
6	CN400	CONNECTOR,BOARD TO BOARD	ENBY0019101	24 PIN,0.4 mm,STRAIGHT , ,H1.5, MALE		
6	CN600	CONNECTOR,BOARD TO BOARD	ENBY0036801	60 PIN,0.4 mm,ETC , ,H=1.0, Socket		
6	D300	DIODE,TVS	EDTY0009501	SC70 ,5.5 V,100 mW,R/TP , , ,5.5 , ,10 , ,100mW ,[empty] ,[empty] ,6P ,5		
6	D301	DIODE,SWITCHING	EDSY0005301	SC-70 ,80 V,0.1 A,R/TP ,		
6	FB301	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FB400	FILTER,BEAD,CHIP	SFBH0008101	600 ohm,1005 ,		
6	FB600	FILTER,BEAD,CHIP	SFBH0000905	600 ohm,1608 ,		
6	FB601	FILTER,BEAD,CHIP	SFBH0000905	600 ohm,1608 ,		
6	FB602	FILTER,BEAD,CHIP	SFBH0000905	600 ohm,1608 ,		
6	FB603	FILTER,BEAD,CHIP	SFBH0007102	10 ohm,1005 ,Ferrite Bead		
6	FL400	VARISTOR	SEVY0005502	18 V , ,SMD ,10 Ohm , 7.5pF , 4ch Array		
6	FL401	VARISTOR	SEVY0005502	18 V , ,SMD ,10 Ohm , 7.5pF , 4ch Array		
6	FL402	VARISTOR	SEVY0005502	18 V , ,SMD ,10 Ohm , 7.5pF , 4ch Array		
6	FL403	VARISTOR	SEVY0005502	18 V , ,SMD ,10 Ohm , 7.5pF , 4ch Array		
6	FL601	VARISTOR	SEVY0007001	18 V , - ,SMD ,6ch, 100ohm, EMI Filter Array chip varistor		

## 13. EXPLODED VIEW & REPLACEMENT PART LIST

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	FL602	VARISTOR	SEVY0007001	18 V,- ,SMD ,6ch, 100ohm, EMI Filter Array chip varistor		
6	FL603	VARISTOR	SEVY0007001	18 V,- ,SMD ,6ch, 100ohm, EMI Filter Array chip varistor		
6	FL604	VARISTOR	SEVY0007001	18 V,- ,SMD ,6ch, 100ohm, EMI Filter Array chip varistor		
6	FL605	VARISTOR	SEVY0007001	18 V,- ,SMD ,6ch, 100ohm, EMI Filter Array chip varistor		
6	L600	INDUCTOR,CHIP	ELCH0010402	270 nH,M ,1005 ,R/TP ,CHIP		
6	L602	INDUCTOR,CHIP	ELCH0005009	100 nH,J ,1005 ,R/TP ,		
6	L603	INDUCTOR,CHIP	ELCH0012503	56 nH,J ,1005 ,R/TP ,1005,Coil-type,J		
6	LD300	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD301	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD302	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD303	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD304	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	LD305	DIODE,LED,CHIP	EDLH0004501	BLUE ,1608 ,R/TP ,		
6	Q300	TR,BJT,NPN	EQBN0007601	SOT-23 ,0.15 W,R/TP ,EMT3		
6	R100	RES,CHIP,MAKER	ERHZ0000443	2200 ohm,1/16W ,J ,1005 ,R/TP		
6	R214	RES,CHIP,MAKER	ERHZ0000439	200 Kohm,1/16W ,J ,1005 ,R/TP		
6	R309	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R310	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R334	RES,CHIP,MAKER	ERHZ0000529	1.5 Kohm,1/16W ,J ,1005 ,R/TP		
6	R338	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R343	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R344	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R345	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R346	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R347	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R348	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R349	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R350	RES,CHIP,MAKER	ERHZ0000419	15 ohm,1/16W ,J ,1005 ,R/TP		
6	R351	RES,CHIP,MAKER	ERHZ0000404	1 Kohm,1/16W ,J ,1005 ,R/TP		
6	R352	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R402	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R403	RES,CHIP,MAKER	ERHZ0000485	4700 ohm,1/16W ,J ,1005 ,R/TP		
6	R406	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R407	RES,CHIP,MAKER	ERHZ0000438	20 Kohm,1/16W ,J ,1005 ,R/TP		
6	R412	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		

Level	Location No.	Description	Part Number	Spec	Color	Remark
6	R413	RES,CHIP,MAKER	ERHZ0000402	10 ohm,1/16W ,J ,1005 ,R/TP		
6	R415	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R602	RES,CHIP,MAKER	ERHZ0000222	150 Kohm,1/16W ,F ,1005 ,R/TP		
6	R603	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R604	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R605	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R606	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R607	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R608	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R609	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R610	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R611	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R612	RES,CHIP,MAKER	ERHZ0000483	47 ohm,1/16W ,J ,1005 ,R/TP		
6	R613	RES,CHIP	ERHY0000244	1.5K ohm,1/16W,J,1005,R/TP		
6	R614	RES,CHIP,MAKER	ERHZ0000486	47 Kohm,1/16W ,J ,1005 ,R/TP		
6	R615	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R616	RES,CHIP,MAKER	ERHZ0000406	100 Kohm,1/16W ,J ,1005 ,R/TP		
6	R617	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R618	RES,CHIP	ERHY0003301	100 ohm,1/16W ,J ,1005 ,R/TP		
6	R619	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	R620	RES,CHIP,MAKER	ERHZ0000505	680 ohm,1/16W ,J ,1005 ,R/TP		
6	SPFY01	PCB,MAIN	SPFY0146201	FR-4 ,0.8 mm,SBL-8 , , , , , , , , , ,		
6	U202	IC	EUSY0300101	WQFN ,10 PIN,R/TP ,Small package Dual SPDT analog Switch, PB-Free		
6	U300	IC	EUSY0317101	WQFN ,10 PIN,R/TP ,1.8*1.4*0.75		
6	U301	IC	EUSY0129503	2x2 mm MLPD ,3 PIN,R/TP ,Hall Effect Switch, Pb Free		
6	U401	IC	EUSY0319001	WDFN-8L ,8 PIN,R/TP ,300mA/300mA 2.8V/1.8V Dual LDO		
6	U402	IC	EUSY0319001	WDFN-8L ,8 PIN,R/TP ,300mA/300mA 2.8V/1.8V Dual LDO		
6	U600	IC	EUSY0319601	SKUFBG ,80 PIN,R/TP ,Bluetooth+FM (5.5*5.5*0.6)		
6	U601	IC	EUSY0317101	WQFN ,10 PIN,R/TP ,1.8*1.4*0.75		
6	U602	IC	EUSY0227901	SON5-P-0.35(I5V) ,5 PIN,R/TP ,2-INPUT AND GATE, Pb Free		
6	U603	IC	EUSY0336501	TSOPJW ,12 PIN,R/TP ,		
6	VA303	VARISTOR	SEVY0005401	18 V ,SMD ,15pF,1005		
6	VA304	VARISTOR	SEVY0005201	5.5 V ,SMD ,1005, 50pF		
6	VA311	VARISTOR	SEVY0003901	5.5 V ,SMD ,480pF, 1005		
6	VA312	VARISTOR	SEVY0003901	5.5 V ,SMD ,480pF, 1005		

## 13. EXPLODED VIEW & REPLACEMENT PART LIST

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Level	Location No.	Description	Part Number	Spec	Color	Remark
3	SVCY00	CAMERA	SVCY0013001	CMOS ,MEGA ,1.3M, S/File 1/3.8", 8*14*5t, BtB		54

## 13. EXPLODED VIEW & REPLACEMENT PART LIST

### 13.3 Accessory

**Note:** This Chapter is used for reference, Part order is ordered by SBOM standard on GCSC

Level	Location No.	Description	Part Number	Spec	Color	Remark
3	SBPL00	BATTERY PACK,LI-ION	SBPL0086001	3.7 V,830 mAh,1 CELL,PRISMATIC ,KG120 BATT, Europe Label, Pb-Free ; ,3.7 ,830 ,0.2C ,PRISMATIC ,50x34x42 , ,BLACK ,Innerpack ,Europe Label		
		BATTERY PACK,LI-ION	SBPL0087301	3.7 V,830 mAh,1 CELL,PRISMATIC ,KG120 BATT, Pb-Free ; ,3.7 ,830 ,0.2C ,PRISMATIC ,50x34x42 , ,ALLTEL SILVER ,Innerpack ,Europe Label	Without Color	
		BATTERY PACK,LI-ION	SBPL0092001	3.7 V,830 mAh,1 CELL,PRISMATIC ,KG120 BATT, Europe Label, Pb-Free ; ,3.7 ,830 ,0.2C ,PRISMATIC ,50x34x46 , ,BLACK ,Innerpack ,Europe Label	Black	
3	SGEY00	EAR PHONE/EAR MIKE SET	SGEY0003503	FG101 ,STERO,Y TYPE 16OHM		
3	SSAD00	ADAPTOR,AC-DC	SSAD0026101	100-240V ,5060 Hz,5.1 V,0.7 A,CE ,AC-DC ADAPTOR ; ,85Vac~264Vac ,5.1V (+0.15, -0.2) ,700mA ,5060 , ,WALL 2P ,I/O CONNECTOR ,		
		ADAPTOR,AC-DC	SSAD0026102	100-240V ,5060 Hz,5.1 V,700 mA,CE ,24pin, England ; , , , , ,WALL 2P ,I/O CONNECTOR ,		

## Note

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